

MINING WORLD

FEBRUARY, 1948

VOL. 11 No. 2

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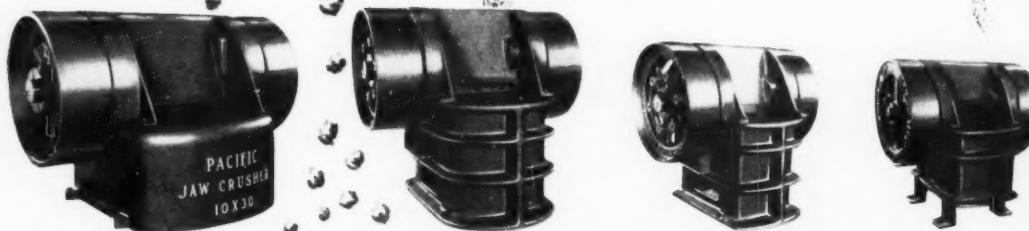
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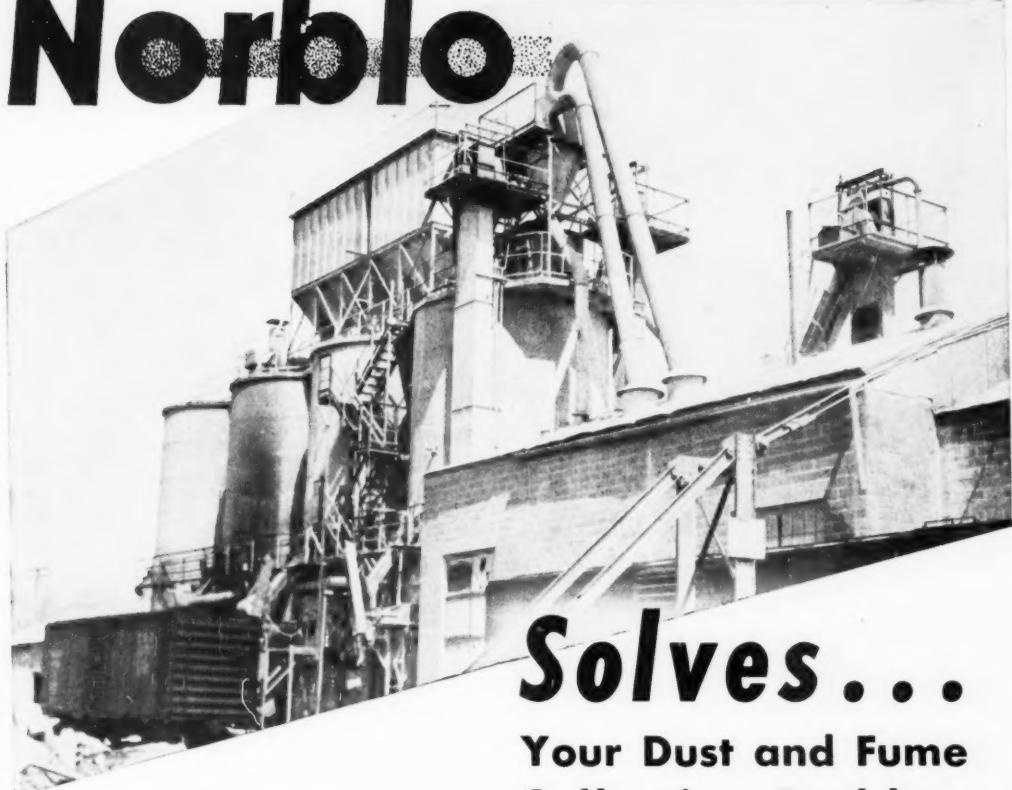
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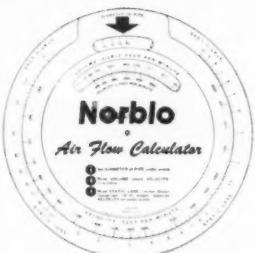
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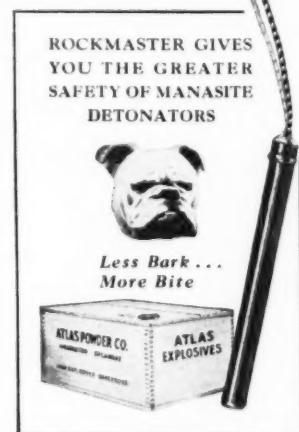
The **ROCKMASTER** Blasting System Holds Down Costs In Spite of Rising Expenses!

In quarries, mines, stripping operations, and on construction projects the cost of drilling, labor, and supplies has increased—but *over-all* costs have been knocked down through the use of the ROCKMASTER Blasting System!

By switching to ROCKMASTER, one limestone quarry effected a reduction of more than 50% in drilling and dynamite costs! Now, instead of drilling on 4-foot centers, holes are spaced on 8-foot centers—sometimes even greater. Breakage is exceptionally good . . . objectionable noise and vibration has been cut to a minimum. This is not an isolated case! More and more users of explosives are using ROCKMASTER to get better breakage . . . save wear and tear on equipment . . . cut *over-all* costs.

When Atlas pioneered ROCKMASTER, it introduced a new concept of blasting. ROCKMASTER is a blasting *system* based on the right explosive and method of loading . . . the proper spacing of holes . . . the selection of the right millisecond delays—all based on the kind of rock being blasted.

Call in your Atlas representative. He'll be glad to show you how the ROCKMASTER Blasting System can be adapted to *your* job.



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ATLAS EXPLOSIVES

"Everything for Blasting"

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**You Have
The Rock**

Get them together and you will have the formula for greatly reduced drilling costs. It doesn't matter what kind of rock it is; there's a Timken Rock Bit to match and master it—including a carbide insert bit.

What makes the Timken Bit so superior? (1) a detachable principle that has proved its correctness by more than 14 years service under all rock drilling conditions in mines and construction work. (2) Timken Steel developed especially for Timken Rock Bits and produced in our own steel plant. (3) Timken metallurgical "know how" in heat treatment and hardening. (4) uniform quality and performance; every Timken Bit will give the same outstanding service in speed of penetration and depth drilled when used in the same kind of rock.

No matter where you are there's a Timken Rock Bit distributor within telephone call. Conversion and reconditioning shops also are conveniently located for quick service. Put Timken Bits to work now—cut drilling costs, increase production.

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TRADE-MARK REG. U. S. PAT. OFF.
ROCK BITS

**THE TIMKEN ROLLER BEARING
COMPANY, CANTON 6, OHIO
CABLE ADDRESS "TIMROSCO"**

... YOUR safety PIN



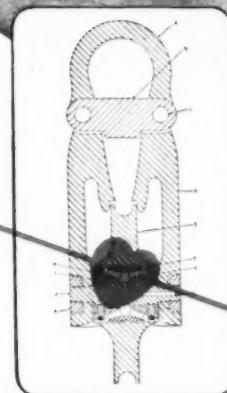
..... is made of chrome-nickel alloy steel.

Only the finest is used in Skookum blocks. This pin ... the heart of the block ... is

- Sealed against moisture, dust and muck
- Has patented bearing adjustment
- Built-in grease seal

In addition

- Sheave of manganese steel
- Timken bearings
- Annealed cast steel sides
- Electrically heat treated for strength
- Streamlined design to prevent line fouling



All of these mean long life and safety



Block failures cost too much
So mine operators specify Skookum
Because Skookum builds the best

THE SKOOKUM CO., INC.

8504 N. CRAWFORD ST. PORTLAND 3, OREGON



MORE SAFETY

Gardner - Denver
Model H K K
Safety Hoist

Four important safety features protect the operator and the load when you choose a Gardner-Denver Air Hoist:

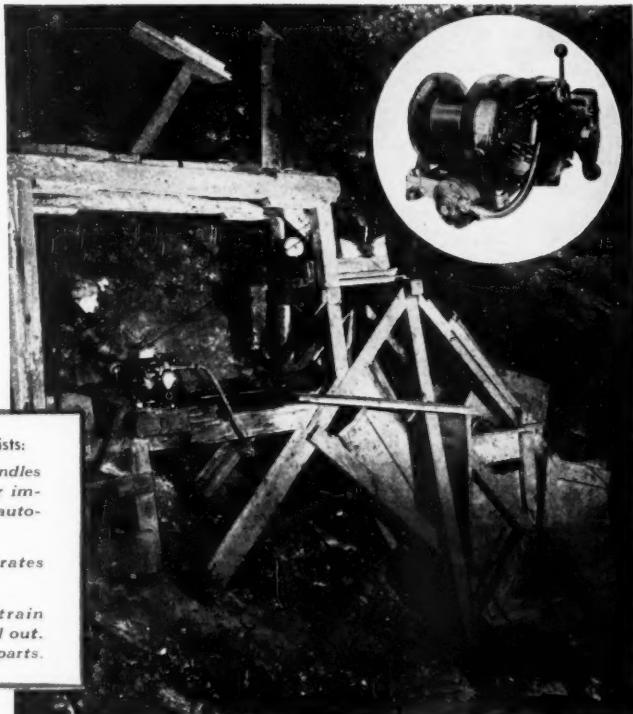
1. Two piston rings on each piston provide enough compression to hold a maximum load almost stationary.
2. A powerful, oversize band brake with quick adjustable take-up holds any load in suspension.
3. The Splined Clutch has a self-locking latch which cannot be disengaged unintentionally.
4. The single throttle lever automatically returns to neutral when released.

Other features of Gardner-Denver Air Hoists:

SPEED — 5-cylinder radial air motor handles capacity loads quickly. Overlap of power impulses greater than on an 8-cylinder automobile engine.

SIMPLICITY — single throttle lever operates hoist in either direction.

LONG LIFE — completely sealed gear train keeps oil sealed in, water and dirt sealed out. Three-point lubrication of all moving parts.



GARDNER-DENVER

SINCE 1859

For complete information, write Gardner-Denver Company, Quincy, Illinois



TIGER BRAND Field Specialist is shown here checking a cross-wind on a drum as part of equipment check to insure proper wire rope application. Even such a small cross-wind as this can cause unnecessary abrasion and reduce life of the rope.

How to stop wire rope trouble—before it starts

Here's a man who can help you plan for maximum wire rope performance. He's one of Columbia Steel Company's **Tiger Brand** Wire Rope Specialists. These skilled service engineers will give your equipment a complete check to make sure all parts are working in long-wear harmony, point out any necessary changes and recommend the proper rope to use. Sheave diameters, sheave grooves, fleet angles, loads handled, service records . . . these are just some of the items on the Specialist's check-list.

Tough **Tiger Brand** is one rope that's under constant control from raw ore right on through to the finish. It's engineered for long wear . . . and to make sure you get all the stamina that's put in it, you are welcome to the services of a **Tiger Brand** Specialist . . . without charge or obligation. Contact your **Tiger Brand** Distributor or any Columbia Steel Company Office.

Columbia Steel Company • San Francisco
Los Angeles • Portland • Seattle • Salt Lake City



Tiger Brand Tip

It's not good practice to have more than one layer of rope on a drum. But if this can't be helped, the added layers should not cross-wind but should wind uniformly across the drum in each succeeding layer of rope.



U·S·S TIGER BRAND Wire Rope

UNITED STATES STEEL



MINING WORLD

with which is combined
THE MINING JOURNAL

A Miller Freeman Publication

Published monthly except in April when publication is semi-monthly

FEBRUARY, 1949

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DRIFTS AND CROSSCUTS

By Charles F. Willis

HIGHER TAXES, FEWER MINES

Those who are concerned with the exploitation and development of our mineral resources have something further to worry about in the proposed \$4,000,000,000 increase in federal taxes on corporations. The "powers-that-be" seem to regard corporations as something impersonal which does not have the ability to protest with the same vigor as can be done by the individual, and thus can be the object of attack with relatively little harmful reaction.



These officials fail to consider that a corporation is nothing more or less than a means of joining my dollar with your dollar, and the dollars of a lot of other people, to do a job that is too big for any one of our dollars to do alone. It permits participation in big enterprises by millions of people whose individual holdings are small. Any effort to curtail such corporate enterprise, or its expansion, is a shot at the middle-class investor, and tends to concentrate the opportunities among those who have large accumulations to start with.

There is already a double taxation on those who are participating in corporations as stockholders. The corporation pays its taxes, just as does the individual, and then the stockholders pay again on the same money when the profits are distributed to them as dividends. The new proposal only accentuates this discriminatory situation.

New mining is dependent upon venture money and one of the principal reasons why the mining industry has not been developing its opportunities as rapidly as the ore has been taken from the ground is that there has been mighty little such capital available. The current tax structure has removed it. Any discrimination against corporations, as is proposed, is putting mining venture money even more distant.

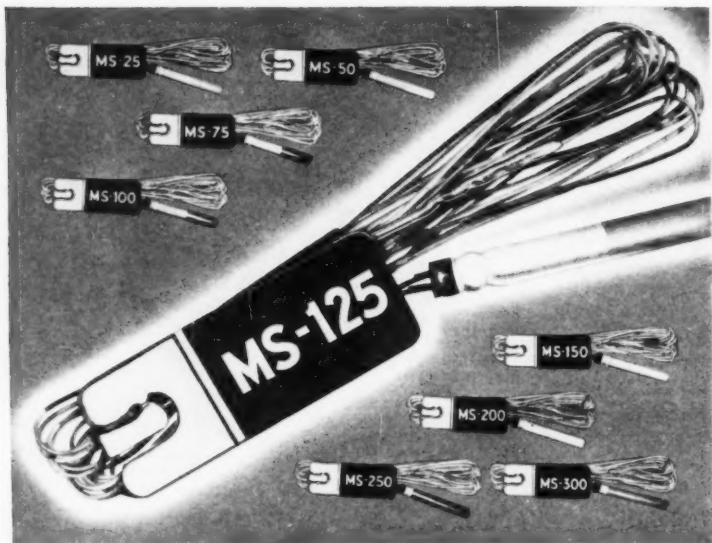
The person of wealth is not going into new mining simply because of the risk involved—if he wins, the government takes the profits and, if he does not win, he absorbs his own losses. What little venture money there has been for new mining has come from middle-class folks joining their dollars together through a corporate structure and setting out with the hope of doing a big job.

An extra burden of taxation applied only to corporations will greatly diminish the attraction of mining and remove the lure of the pot of gold that may be at the end of the rainbow. Now, that proverbial pot of gold is nothing but taxes—and more taxes.

Every person who owns a share of stock in any corporation should let his Congressman know that this proposal to place extra burdens on corporations is not going to be popular, and that the real remedy for overspending is to do exactly what you and I do in the same situation—curtail our buying.

TENANTS HAVE NO HOUSEHOLD GODS

The mining industry is fearful of the trend in government policy toward leasing. Our basic mining law, while far from perfect, is seasoned. It is well understood and time-tested, both in application and in the courts. The miner knows where he stands, what he must do to maintain title and secure patent. He has "exclusive rights and enjoyment of all the surface," which is right and as it should be. It offers incentive for his labor, efforts, hardships, faith. Under a leasing system he not only assumes the status of a tenant, as to tenure, but also that of a share-cropper as to profits and expansion.



Underground Ore Miners Approve These Du Pont Products

DU PONT SPECIAL GELATIN

A water-resistant dynamite of high velocity. Plastic and cohesive. Excellent fumes.



DU PONT "GELEX"

An economical, semi-gelatinous dynamite sufficiently water-resistant to meet most requirements.



New "MS" (millisecond) Delay Electric Blasting Caps offer many advantages

These new "MS" (millisecond) Caps—another product of Du Pont Explosives research—provide the following outstanding advantages over conventional delays in many types of blasting.

1. **Better fragmentation** with a saving of dynamite.
2. **Rounds are pulled clean**. Bootlegs reduced.
3. **Cut-offs are prevented**... no unexploded dynamite in the muck.
4. **Concussion and vibration are reduced**. Timber damage prevented.
5. **Priming is easier** with the two-inch length of all nine "MS" Delays.
6. **Nine periods of delay**. Intervals are clearly marked (see illustration above).

"MS" Delay Electric Blasting Caps, like all other Du Pont Electric Blasting Caps, are made with watertight Rubber Plug Closures, and have Nylon-Insulated Wires with Aluminum Foil Shielded Shunts.

"SERIES B" DELAY ELECTRIC BLASTING CAPS. Another new addition to the extensive line of Du Pont Electric Blasting Caps is the "Series B" also used in rotation shooting. It was designed to eliminate misfires due to arcing or "water hammer."

DU PONT ELECTRIC BLASTING CAPS. These caps are selected without question by ore miners everywhere for blasting operations requiring an instantaneous cap.

DU PONT FUSE CAPS... more of these caps have been purchased than any other blasting cap on the market.

Ask any Du Pont Explosives representative for complete information about these new caps or the dependable blasting products listed in the adjoining column.

E. I. DU PONT DE NEMOURS & CO. (INC.)
Explosives Department, Wilmington 98, Del.

DU PONT "EXTRA" DYNAMITES

Efficient and economical for shooting soft ores in many cases.



OTHER DEPENDABLE BLASTING PRODUCTS

- DU PONT SUPERIOR CRIMPER . . . makes a watertight crimp
- DU PONT QUICK-SEAL TAMPING PLUGS simplify tamping
- DU PONT BLASTING GALVANOMETER
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- CONNECTING WIRE
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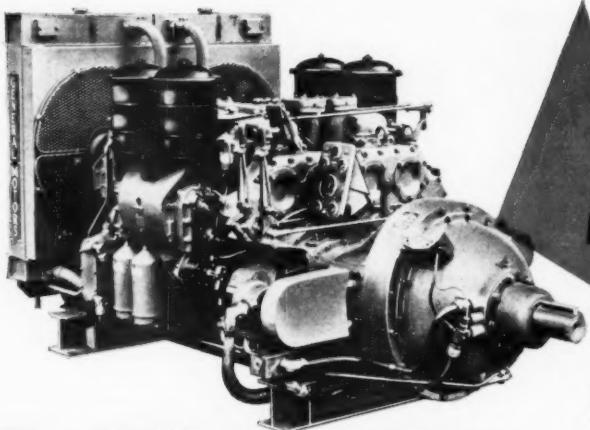
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BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY
MINING WORLD

DU PONT EXPLOSIVES

(ELECTRIC BLASTING CAPS, "NITRAMON," "NITRAMEX," DYNAMITES
BLASTING SUPPLIES AND ACCESSORIES)



A Combination Torque Converter and Fluid Coupling Integral with the Engine

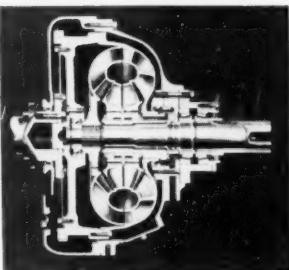
The NEW General Motors DIESEL ENGINE-TORQUE CONVERTER UNIT

HERE is a complete, integrated Diesel engine-torque converter unit that combines the inherent efficiency of the GM 2-cycle Diesel engine with the features and advantages of both torque converter and fluid coupling. It provides torque multiplication up to 4 to 1 for starting variable heavy loads. It also provides highly efficient transmission of power during light load periods by automatically shifting to fluid coupling in the upper speed range.

A smooth, uninterrupted flow of power, delivered through a liquid, prevents engine stalling under any load and protects both engine and driven machinery from sudden shocks.

One Manufacturer—One Responsibility

Up to now most engines and hydraulic drives have been separate units. The result—compromise designs and divided responsibility. Now General Motors



In the new GM Torque Converter, oil does the work. Automatic transition from torque multiplication of 4:1 at stall to 1:1 in upper speed range.

offers a new torque converter specifically designed and manufactured as an integral part of the General Motors Series 71 Diesel engine. It is a self-contained unit built by one manufacturer providing a long needed saving in space and weight as well as certain desirable operating characteristics not available before.

This new power unit will get the most work done in the least time because the engine operates in its most efficient speed range at all times—delivering maximum engine horsepower regardless of the speed of the load. Maximum torque to start heavy loads PLUS maximum horsepower to keep the load moving.

Everyone with a hard job to do in the oil fields, in construction, in mining or in logging should have all the facts about this compact, flexible GM Diesel Engine Torque Converter unit. Write today for a complete description.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES . Up to 200 H.P.

DETROIT 26, MICHIGAN

MULTIPLE UNITS . Up to 800 H.P.

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK



DIESEL
POWER

It is not amiss here to quote a statement made something over a hundred years ago and generally credited to Senator Benton:

"Tenantry is unfavorable to freedom. It lays the foundation for separate orders in society, annihilate the love of country, and weakens the spirit of independence. The tenant has, in fact, no country, no hearth, no domestic altar, no household god. The freeholder, on the contrary, is the national supporter of a free government, and it should be the policy of republics to multiply their freeholders as it is the policy of monarchies to multiply tenants. We are a republic, and we wish to continue so. Then multiply the class of freeholders; pass the public lands cheaply and easily into the hands of the people; sell for a reasonable price to those who are able to pay; and give without price to those who are not."

Goodbye—Mohave Gold Mines

The announcement, made a few weeks ago by L. H. Duriez, manager of the United States Smelting, Refining and Mining Company, was a sad commentary on the mine-taxation policies of the State of Arizona. It read as follows:

"The United States Smelting, Refining and Mining Company has decided to liquidate and remove the remaining equipment underground and its mill and surface plant at its Goldroad mine due to the high cost of maintaining the property and high taxes. On account of the remoteness of obtaining relief from the high cost of labor, materials, and the gold price, it is impossible to mine the present low-grade ores economically. As the greater part of this equipment will no doubt become obsolete before operations can be resumed, it will all be disposed of."

The mining company's last operation of the Goldroad mine and mill started in 1934 and was halted in October, 1942, by government order.

Here is a large mining plant, shut down because of the gold-mine closing order, L-208. Its usefulness completely ceased in October, 1942, by federal order. It has contributed to the economy of the gold-mining area in that it continued to employ watchmen and pumpmen on the property, anticipating that some day conditions would permit the mine to be reopened. But continued high taxes have brought about the economic necessity of liquidation.

The effect is not merely on that particular mine and company. The complete liquidation of the plant removes the possibility of any gold mine in that area starting operations, because that plant, when allowed by the government to operate, had served as a custom mill treating ores from small mines in the district.

Charles F. Willis

Especially for Soft Money Men

Much as the soft money addicts might dislike it, their wagon is hitched to gold, perhaps indirectly, but nevertheless hitched. This hitching goes back to the day when the West was opening up and the prospector scouted the hills for gold and when a camp was struck a bridgehead was established from which men fanned out into the surrounding territory and opened up more prospects and mines. Many of the finds proved of little value so far as gold was concerned, but they became the nonferrous camps of today, such as Butte, the Coeur d'Alenes, Bisbee, and many others. Therefore, when the soft money men buy batteries for their automobiles, plumbing fixtures, or any of the great variety of metal objects that go to make up the complexities of everyday American life, they owe much of the metal in the article, indirectly though it may be, to the gold mining industry.

The past year has seen the struggle for survival of the gold mines of this continent intensified. How to maintain some profit with mounting costs without sacrificing developed ore reserves and leaving as written off the submarginal ore, as well as permanently placing areas of unprospected but potential productive territory out of bounds forever, perplexes the industry.

Following upon these conditions the industry is prevented from doing lateral work to develop more ore even though geological evidence indicates that the chances are excellent. Furthermore, submarginal reserves never will be extended. These lower grade reserves, although they would not contribute to any large dividend payments, would at least contribute to local prosperity and their mining might result in more valuable high-grade discoveries.

Unless the restrictions hindering the gold mining industry are removed, the most lucrative mines on the continent are going to follow the poorer ones in shutting down. The impetus and momentum to new mining development in the United States and Canada are coming to a standstill and, once halted, getting the industry started again will be more and more difficult.

Furthermore, plaguing the gold miners is the lack of appreciation of the benefits of gold mining even within the metal mining industry. It takes no imagination to see that gold prospectors are responsible for nearly every one of the base and other metal camps of Australia, Latin America, South Africa, Canada, and the United States. Without the lure of gold most of these camps would never have been developed. Without subsidies or bonuses the western United States was opened up by the metal miners. No estimate can be made of the high cost of government aid to develop the country had it been necessary to do so out of the public treasury. It might be that without the gold strikes the western part of the United States would be largely undeveloped today. Another item is the jobs created by the industry itself and, indirectly, for other segments of the population.

The ceiling on the price of the gold miners' product works a severe handicap on the operation of any gold mine. The exigencies of financing legitimate mining ventures are striking at the very roots of this and other pioneer nations' prosperity. This is borne out by a century of gold mining in the United States and much over half a century in Canada, South Africa, and Australia. Inherently the industry needs speculative capital in the early stages of development and the metal mining industry cannot be maintained without prospectors and financiers.

How the tide is running out can be seen in nearly any claim recorder's office. Where fifty claims were filed at the turn of the century and ten claims a decade ago, the average is not one today. These records show what is happening to the prospectors. Also the short list of men who financed the mines of the last 60 or 80 years is almost erased entirely. These two factors tell better than words what is happening to the mining industry of America.

History points out that once either one of these factors vanishes from the scene it becomes extinct and nothing can bring it back. We hope that history is mistaken, but we are dismally certain that the men who make mines have vanished from the scene forever.

Therefore, MINING WORLD recommends that the soft money men pause and consider how much of a nick it puts in a \$50 bill to buy batteries for their automobiles and put so-called "useless" gold to work by permitting the gold camps to serve again as bridgeheads for other discoveries of metals. By more benevolent legislation, by removal of barriers, such as the SEC, to venture capital, or by inflation of the price of gold, the attendant increase in the output of other metals would see much less of a \$50 bill expended for an automobile battery. A mining camp definition follows: "The biggest nerve in a man's body is the pocketbook nerve." Soft money men, having this kind of nerve just as the hard money men do, should find the above especially soothing to their nerves.

—J. B. D.

MINING WORLD

Two-way Gold Getter

Robert P. McCullough, tractor operator (left);
C. W. Hanna, dredge master.



MONEY saved in operating costs is just as good as money received from product sales. With the "Caterpillar" D8 Tractor and No. 80 Scraper shown below, The Natomas Company, of Battle Mountain, Nev., gets overburden removed faster and cheaper than it was ever done before.

Says Resident Manager C. E. McKay: "All you gotta do is drop the bowl and you can load it in 30 feet. There's no question about 'Caterpillar' equipment . . . it's GOOD. My company has used it since its earliest days, and we're especially pleased with this new scraper outfit."

On this Greenan Placers operation some 12 million yards are being stripped for bucket line dredge work. Assisting, on stripping, road grading, campsite building, pipeline laying and general utility work, are a "Caterpillar" D8 with No. 8A Bulldozer, a D2 Tractor, and a D440 Engine. They're key equipment to gold mining in the modern and most profitable manner.

CATERPILLAR TRACTOR CO. • San Leandro, Calif.; Peoria, Ill.



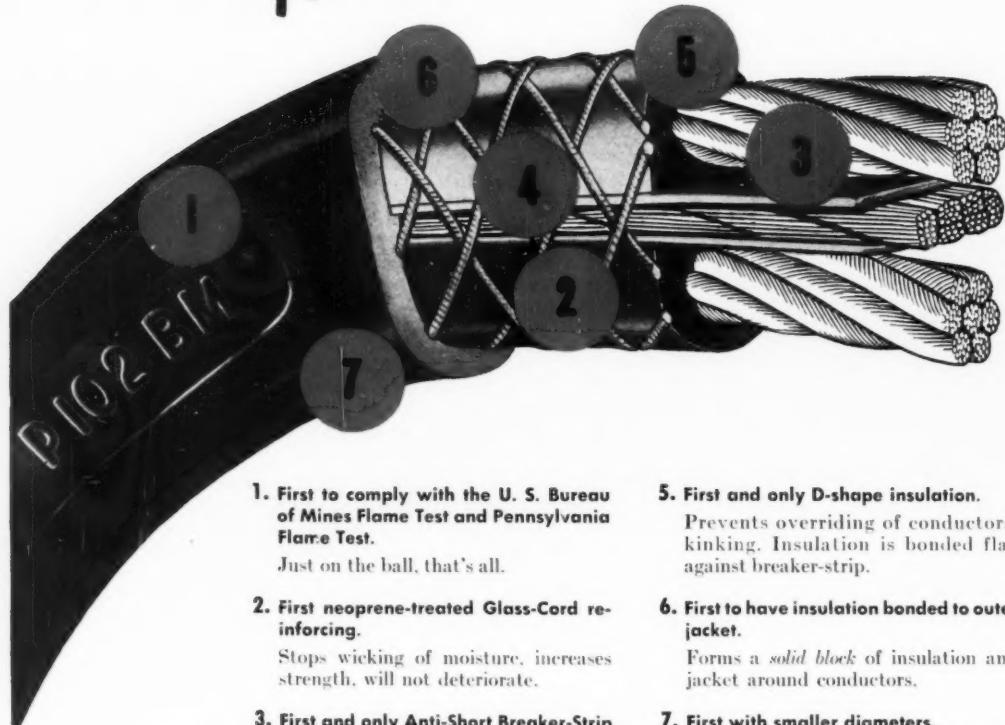
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REG. U. S. PAT. OFF.

DIESEL

ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

Count the *FIRSTS* in Securityflex Cable



1. First to comply with the U. S. Bureau of Mines Flame Test and Pennsylvania Flame Test.

Just on the ball, that's all.

2. First neoprene-treated Glass-Cord reinforcing.

Stops wicking of moisture, increases strength, will not deteriorate.

3. First and only Anti-Short Breaker-Strip construction (with or without ground wire).

Permits heavier impact.

4. First parallel mine cable with ground wire.

Four years ahead of the industry.

5. First and only D-shape insulation.

Prevents overriding of conductors, kinking. Insulation is bonded flat against breaker-strip.

6. First to have insulation bonded to outer jacket.

Forms a solid block of insulation and jacket around conductors.

7. First with smaller diameters.

To pack more on a reel; for easier handling. Now adopted by U. S. Bureau of Mines.

**REMEMBER, ANACONDA RESEARCH
AND ENGINEERING FACILITIES
ARE AT YOUR SERVICE**

Add to these basic *firsts*: the advantages of Anaconda mine cable's specially compounded, extra tough *neoprene* outer jacket . . . improved, heat resisting insulation . . . superior manufacturing techniques. Call the nearest Anaconda office to know how you can mine more tons per cable—with Securityflex.

ANACONDA WIRE & CABLE COMPANY
25 Broadway, New York 4, N. Y.

ANACONDA *Securityflex* **MINE CABLE** **ANACONDA**
MINING WORLD

MOVING RED EARTH

in the Black



When you
SPECIFY CUMMINS
you get:

- Fast work cycles
- Fuel savings
- Low maintenance
- Minimum down-time
- Long engine life
- Warranty—100,000 miles or one year
- 'Round-the-clock service

CUMMINS
DIESEL

SINCE 1919 PIONEER OF PROVENABLE POWER
THROUGH HIGH-SPEED DIESELS



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PAUCITY OF RELIABLE NEWS FROM MUNITIONS BOARD AROUSES TAXPAYERS' SUSPICIONS

The rather bad publicity the Munitions Board has been receiving from press and radio, recounting the unbalanced condition of the stockpile and the small percentage of completion, evidently has given cause for fretting. As an off-set, publicity from the board is taking on a somewhat Pollyanna atmosphere. The last release says, "The Munitions Board yesterday said its accelerated buying program for war stockpile of 28 top priority materials is progressing 'satisfactorily.'" Nothing is said about those materials not "top priority." Nor, without knowing the stockpile aims, can one tell percentagewise what is meant by progressing satisfactorily.

Statistically there are two ways of filling the stockpile—by adequate purchases against adequate aims—or by reducing those aims. A half-million tons of copper may be 10 per cent of the requirements or 100 per cent of the requirements. The public would be no wiser if the percentage in the stockpile of a given item was doubled by clever purchasing or by halving the stockpile aims. What the board does not realize is that the public suspects that the cloak of secrecy used (improper under the act) may hide a lot of shenanigans.

● Higher Prices on the Horizon

The copper market unofficially still is climbing. As this is written, advices from New York say that "free" copper, i.e., that which is not directly controlled by the large companies, is selling as high as 27 cents per pound. This probably precedes a general rise in price, which usually precedes more strikes.

It is the small zinc, lead and copper producers who are hardest hit by increasing costs. The effort to stay in business forces them to press for high prices. As has been pointed out before, this is one time when marginal producers can use the whip—more in zinc, perhaps, than lead and copper.

If the large companies had supported an incentive payment plan the marginal producers would not have had to worry about forcing prices up, the big companies could have set their own figure, strikes might not have made supplies still shorter, and the ultimate consumer would have saved hundreds of millions of dollars.

● Small Business to Receive Attention

Small business again is looming large in the eyes of the government.

Commerce Secretary Sawyer is said to be planning to enlarge the Small Business Section of his agency from its present staff of less than a score, up to over 100 employees, and there is talk of placing the division under an assistant secretary.

The President has endorsed the continuation of the Small Business Committee of the Senate and it is more than likely the House Small Business Committee will have its life renewed. The Senate Small Business Committee always has taken a strong interest in small and marginal mining and last year the House Small Business Committee did considerable work on the metals situation. Under the able chairmanship of Representative Engle of California, it is expected that the mining subcommittee of the House Public Lands Committee will do business in a big way.

● Exploration Subsidy Proposed

The Interior Department is said to be proposing an exploration subsidy program which would require the operator to put up 50 percent of the costs. Whereas it has a fine sound to require matched funds, or to hook exploration money to production volume, those who propose such schemes lose sight of the fact that there is no necessary relation between the potential value of a piece of ground and the current production therefrom or the size of the pocketbook of the operator. Exploration grants are for the purpose of increasing the country's ore reserves and the only criteria should be—"Is this project a worthy one?" — and "How much will be needed to do the job right but without waste."

● Mining Bills Will Be Offered

Among the flood of bills which will hit the congressional hopper this year will be a number of mining bills, including, no doubt, ones for mining contract settlement, RFC mine loans, geophysical mining claim locations, and for exploration and production incentive payments. With the Haldecks and the Allens relegated to second fiddles and the Rules Committee's claws clipped, perhaps the House of Representatives will get the chance for an honest vote on these measures.

● Tax Structure Major Deterrent

There still is a tendency to try and find a specific whipping boy on whom to blame the lack of venture capital for new small mining ventures. Evidently, the passage of the Vandenberg Act some years ago, lifting the exemptions to issues up to \$300,000 has gone largely unnoticed. The peculiarities of the tax structure as a deterrent to venture investments still does not seem to get the attention deserved. The government's "heads I win, tails you lose" attitude towards speculative investments has dried up the source of venture capital to a far greater extent than seems to be realized.

● Purchasing Agency Proposed

Washington reports indicate there may be a movement to set up a government corporation after the pattern of Metals Reserve Corporation (now the Office of Metals Reserve, RFC) to take over stockpiling purchases from the Bureau of Federal Supply. There seems to be considerable dissatisfaction with BFS, both in government and in private circles. After all, though, BFS essentially operates on directives from the Munitions Board and if the same policy-making group controlled a new purchasing agency, there is some question as to what might be gained. Yet in drafting an act to set up such a corporation it is possible that the Congress might be able to write the enabling legislation in such a way as to clarify certain points in the Stockpile Act of 1946 and to confer powers on the new corporation which BFS now claims it lacks—such as financing by means of advances against future production.

● Scrap Metal from ECA Countries

The story broke in mid-December that a considerable amount of scrap metal was coming to this country from ECA countries. ECA later denied that significant amounts were involved and stated that there was no proof that the identical metal previously sent ECA countries was involved.

The ECA administrator should admonish his staff about jumping into the press with such statements. First, the denial seldom catches up with the accusation—and when it does, many people believe it to be merely a cover-up. Second, the memory of the French scrap scandal after the First World War by no means has been forgotten and a great many people are glad to believe the worst.

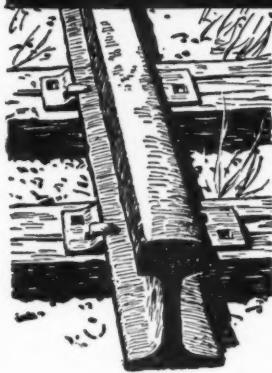
In any case, should it prove that ECA countries have scrap metal to export, it shows we are allotting them too much metal, or that they are more avid for dollars than for metal.

The astounding amount of metal which is being shipped abroad by ECA is shown by the fourth quarter

(Continued on Page 64)



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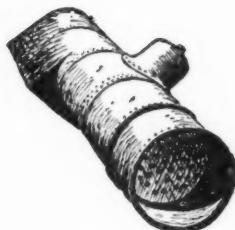
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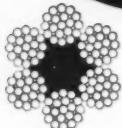
FEBRUARY, 1949

15

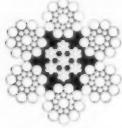


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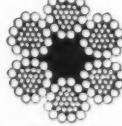
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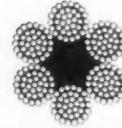
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6 x 37 Filler Wire
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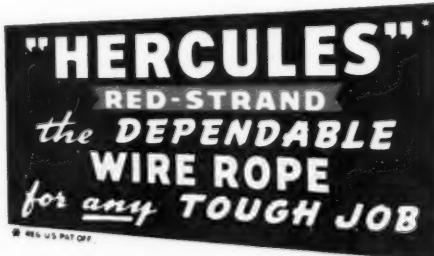


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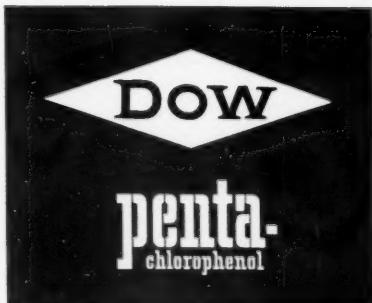
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The headframe and ore loading pocket of the Godfrey mine. A loaded ore car has pulled away and an empty is in place for loading. The stockpile in the left background is a standard that is drawn upon from time to time.

The underground mines on the Minnesota and Michigan Iron Ranges, although dwarfed by the open-pit workings, both by sheer size of the machines employed and by output, nevertheless constitute an important segment of the industry destined to be of increasing importance to our domestic economy. This group of mines, numbering about 45, is scattered across the six Ranges, centered principally in Michigan. That they are to attain a greater stature is proved by the shaft sinking now going on or recently completed in the various producing areas.

One of the principal underground producers on the Mesabi is the Godfrey mine. It lies a short distance east of Hibbing on a branch of the Duluth, Missabe and Iron Range railroad and at present is producing approximately 2,250 to 2,500 tons of ore daily on a year-round basis and works a five-day week, two shifts per day. This mine is operated by the Oliver Iron Mining Company, a U. S. Steel subsidiary, W. Been, superintendent.

The Orebody

The orebody is a bedded deposit that dips 7 to 8 percent southeast.

mesabi UNDERGROUND PRACTICE

Oliver Godfrey's mine, currently producing about 2,500 tons daily, is an example of the mining system employed on flat lying orebodies

It is beneath a layer of glacial drift and till, and extends as a blanket layer between a slate capping and a hard taconite bottom. The thickness of the orebody varies from 8 to 30' and averages about 12', a feature that contributes in no small way to the selection of the mining system. The ore is classed as soft, but will stand over open spans of from 6 to 12'.

The maximum dimensions of the panels mined are 100 x 500'. The orebody is developed by haulage drifts spaced at 500' intervals that generally are semi-normal to the strike of the bed. Grades of these drifts vary from 3 to 4 percent.

In some sections of the mine, enriched higher lying orebodies are found that run up to 80' thick and 100' wide.

Shafts and Development Headings

The Godfrey shaft is a five compartment bore, 11 x 18' in the clear, two of which are utilized for ore hoisting, one for the manhoist, one for a manway, and the fifth for a service raise that is used to carry air, water, and electric cables. Steel sets are used throughout. Concrete lagging is used through the mantel of glacial drift and from the bedrock ledge to the sump.

The shaft is surmounted by a steel headframe 90' high.

From the collar to the working level measures 227' and an additional 84' of depth provides for the ore pocket and sump. The skip pocket is of 50-ton capacity, which is plenty, considering the short lift to the headframe ore bin.

A single drum hoist operates the skips in counterbalance and the man cage hoist is counterbalanced by a weight in the service compartment.

Four timber shafts are on the property to lower timber into the workings in the active areas, thus liberating the main shaft from this service. Each timber shaft has its own timber yard. These auxiliary shafts also are employed as airways, one for exhausting air, one for a fresh air intake, and two for stationary airways. They are of various sizes, the largest 8 x 12' in the clear, and are timbered with native timber.

Haulage drifts are driven 10 x 10' in the clear, timbered, and the posts are placed with no batter. Posts are set six feet apart. In the orebody the sets are tightly laced with lagging, but in the slate the lagging is more widely spaced. Round native timber is used, ranging from 8 to 14" in diameter.

Mining System

The mining system followed is a retreating one with withdrawal toward the shaft. Haulage drifts are driven to the limit of the ore or the property. Drifts extend from the shaft for over one mile to the west and up to one mile to the east.

From the main haulage drifts slice drifts are turned off at 100' intervals at an angle that permits loaded cars to move by gravity down the grade to the main haulage drifts. Mining begins at the limit of the ore body, or "shore line," property line, or the limit of the mined-out panel above.

To begin a mining panel, the first

Left: Lighting a round for blasting in the Godfrey. A good idea of hole spacing and the height that the stope is carried can be had in this shot, which also shows wire fencing in place on the right. **Right:** After the blast when the fumes are blown out the first step toward removing the broken ore is to place the tail sheave for the slusher in order to begin the mucking cycle. Here two men hook the sheave to a chain attached to a sprag set between the cap to the rear and a hitch cut into the breast.



set-up drills six-foot holes over a width of 10', the number depending upon the character of the ground. The round is fired with conventional caps and fuse, and as soon as the powder fumes are cleared away the crew picks down the loose material from the back and sides. To catch up the back, they cut three hitches in the breast, one on either side and one in the middle, and set poles of native timber from the set in the back of the freshly blasted breast to the hitches. The poles are then covered over with boards or lagging.

Speed in performing this task is all-important, as the back begins to ravel and come down immediately. An hour or two of delay and it may become impossible to save the set.

After this the breast is squared up, posts put in place, staging put up if the crew is working in tall timber, the cap swung into position, and the set blocked down.

This timber cycle is repeated until a slice 10' wide, 50' long, and the thickness of the orebody is completed.

Should the orebody be greater than one slice thick, the practice is to stand timber that is then lagged with poles 4 to 6" in diameter which, in turn, is covered over with standard wire fencing 42" wide. Wire fencing also is put up next to the pillar. After the fencing is stapled in place, the timber is shot down on the cave side, thus making the broken ground come down regularly along the cave side of the stope and along the line of retreat. A hole is drilled in the timber with an auger, dynamite placed in it, and the shot detonated with fuse and cap to break the timber and bring down the broken back in a regular manner. The wire fencing is laid lengthwise of the drift. One of the 42" sections of fencing extends up on the posts to a height that permits reasonable overlap to prevent dilution from the roof when the timber is shot and the adjacent cave comes down.

The next slice is taken out below the mat of wire and pole lagging and is largely a repetition of the procedure outlined above. Care is taken not to break the fencing, as the broken material, in most stopes, runs freely and such spills have proved time-consuming and difficult to stop.

In rare sections of the orebody mining may be extended until the ore pinches down to as little as four feet, but cuts will not be initiated on ore-bodies averaging less than eight feet. As a rule, mining stops on the shore line when the mineable thickness approaches four feet.

Slices may run as thick as 18' in some sections of the mine. In these sections posts of a like length are placed. However, the practice, in places where the ore averages 14 to 16 or 18' thick, is to take two slices. Ordinarily, the back of the orebody is

level, but the bottom is very uneven, pitching and rising without rhyme or reason.

Drilling and Blasting

Holes are put in with unmounted sinkers, the miners breasting the drills into the face. The perforating is done with 2" twist augers and generally little resistance is met with in drilling a round. In the ordinary slice nine, six- or seven-foot holes are employed and 12 holes are used in development or initial cuts. No cut holes are drilled as a rule, although they may be used in tight ground. The drilling pattern does not follow any set rule and varies as the ground.

Powder consumption, too, is entirely dependent upon the type of ground. An average stop shot consumes 70 sticks of dynamite, whereas development cuts and headings use from 65 to 150 sticks. All shots, no matter where they are placed, are blasted with caps and fuse. Fragmentation is excellent in most blasts, the ore being reduced to fine material that makes mucking easy. The average powder duty is 0.6 lb. per ton.

About eight feet advance is made per round.

Mucking

Slides are constructed over the tracks that permit the ore to be pulled up and loaded directly into the cars. These are built of timber, and being elevated give the tugger operator a clear view down the slice. Once a slide is built in the slice drift, it is carried through to the completion of the drift. The slides are so constructed that they can be moved back to a new set-up.

Mucking is done by 20 hp. double drum tuggers, all of which are powered with alternating current and the tuggers are set up from six to ten sets from the first cut.

Scrapers are standardized and those in use are 48" wide. No unusual rigging or hook-ups are used in mucking and $\frac{1}{2}$ to $\frac{5}{8}$ " wire rope is employed.

Tramming

Trains are gathered by 250 hp. DC motors that run over 60-lb. rails in



The soft ore of the Godfrey is easily perforated by augers such as the miner is using in this picture. No standard round is adhered to but the holes are spaced according to the character of the ground.

the main haulage drifts and 30-lb. rails in the slice drifts. Gage is 24". With heavy rails such as those mentioned and the established gage, derailments are nearly unknown and maintenance costs are reduced to a minimum. Heavy motors were chosen with a purpose—owing to the pitch of the orebody, the grades on both main haulage and slice drifts run between three and four percent and heavy-duty motors are essential.

Trains are made up of six 74 cu. ft. cars and dump directly into the skip pocket.

Working Customs

Two-man gangs are employed throughout the mining sections. These gangs do all work connected with the mining in slice whether it be drilling, blasting, mucking, timbering, or miscellaneous items. They are serviced with tools, powder, timber, and cars which are brought within tugger reach of the slice by regular crews made up of a motor-man and brakeman employed for the purpose on company account. Cars are pulled up to the slide by the tugger and after loading are eased down to the gathering track in the same manner.

A timbering picture in the Godfrey showing the procedure followed in advancing a slice in stoping. This two-man crew is putting up an intermediate pole to reinforce the back, although this practice is not a standard one.



WE NEED MORE MINERAL NEWS

A dried up source of information pertaining to the minerals industries could be revived if the Federal departments would consider releasing it

Once upon a time the U. S. Department of Commerce published a good periodical filled with meaty items about the minerals industry. Especially worthwhile were the articles and short items relating to foreign activities in the metallic and nonmetallic fields. The journal was called the *Foreign Commerce Weekly* and was the organ that disseminated the information gathered abroad by a corps of specialists in the employ of the Department of State and the Department of Commerce.

Then a new *ism* swept over the land. It was known as *havenatism* and the citizens of the United States were supposed to give ear to the propaganda that they were on the verge of running out of nearly all classes of metals and minerals. The ring of advisors who had the ear of the administration, men for the most part with no formal education or training in the minerals industry, to judge from their mouthings, suddenly decided that the news carried in the *Foreign Commerce Weekly* should be censored absolutely, and so it was. So for many months the journal has been barren of nearly all news pertaining to minerals.

Occasionally an item of major importance sneaks by, further exposing the fact that the censor is not acquainted with the minerals industry. Such an item appeared on page

By Mark Harding

Research Engineer
San Francisco, California

35 of the issue of October 9, 1948, under the heading of "Development of Titanium-Ore Deposits, Canada." The note is printed hereafter in full.

An extensive deposit of titanium-bearing ore has been discovered near Lake Allard, about 400 miles northeast of Quebec, Canada, according to the Canadian press. A \$14,000,000 plant for treating the ore will be built and is expected to be completed by mid-1950, it is stated. The factory will be owned and operated by the Quebec Iron and Titanium Corporation.

These few words concern one of the greatest mineral developments of our day. However, the item is rank understatement and is filled with many a hiatus and unsounded truth awaiting to be born. The titanium-bearing ore is combined with iron, another valuable metal that will be recovered. "According to the Canadian press," gives a foreign tang to the information. The reputable *Wall Street Journal* also carried news of the development in much greater detail many days before. The sum of \$14,000,000 is only a fraction of the contemplated investment. The total is expected to be in the neighborhood of \$150,000,000. The "factory"—another misused word, *plant* being preferred—will be owned by the Quebec Iron and Titanium Corporation, but the control lies with the Kennecott Copper Corporation and the New Jersey Zinc Company, almost as American as pie and coffee. Not mentioned is the fact that the deposit contains an estimated 125,000,000 tons of ore, quite a figure for any orebody.

The pay-off comes when it is observed that the information was printed under the heading of "Paints and Pigments." True, titanium today is used principally for paints, but it is supposed that the production of this plant will be largely in the form of titanium metal, as pilot plants are now producing it in sponge form and it is but a step from this to ingot form.

This leads up to a point that should be made clear to the departments of State and Commerce. Quite often they let something slip out in the

minerals field under "Paints and Pigments." Also, another place they should tighten up is in the "Chemicals" department of the *Foreign Commerce Weekly*. Here they disclose facts and figures dealing with phosphate and potash, sometimes running into the millions of tons. For the information of the departments these commodities do not grow on trees, but are mined and processed in some sort of plant.

Furthermore, in the issue of October 9, appeared reference to calcium-arsenate, pyrites, magnesia, soda, litharge soda ash, and sulphur. Even though appearing under "Chemicals" they are derived from the ground by some form of mining. Maybe now that the two departments know of this *fauz pas* they will see to it that mine-derived products will be left out of that section of the periodical.

To indicate the low estate to which the *Foreign Commerce Weekly* has fallen since the war, it is necessary to cite only one or two examples. To choose at random, the issue of June 2, 1945, contained as titles the information set forth in Table 1, pertaining to minerals, and it was good meaty material.

In this same issue a section was devoted to "Petroleum and Products." It, too, told of pertinent factors and gave production figures in various countries.

By way of contrast, compare the most recent issues of the publication.

TABLE 1
Items chosen from the issue of June 2, 1945.

- Page 14, Kara-Tan's Billion Tons of Phosphate Rock—a 2½-page article.
- Page 21, Ceylon's Mineral Production and Trade—graphite.
- Page 24, Colombia Mining and Petroleum—gold, platinum, and petroleum.
- Page 30, Rhodesian Copper Belt.
- Page 31, Philippine Cement Plant.
- Page 35, Chile Nitrate.
- Page 35, Coal—various countries.
- Page 38, China Appraises Nonferrous Metals (Box).
- Page 39, World Potash Situation considered (Box).
- Page 42, France—Strontium Deposit.
- Page 42, Mexico—Fluorspar Production.
- Page 51, Nicaragua—gold.

TABLE 2
Items chosen from recent numbers of the magazine.

- Page 3, Sept. 25, Danube Navigation Policy.
- Page 14, Sept. 25, Inventor Offers Right to New Packing Case.
- Page 14, Sept. 25, South African Visitor to Buy Farm Equipment.
- Page 33, Sept. 25, Philips Company's Activities During 1947.
- Page 3, Sept. 18, Berlin—Its Economic Structure.
- Page 3, Oct. 2, Development of Resources in British Colonies.
- Page 17, Oct. 2, New Trade Inquiries from Occupied Areas.
- Page 9, Oct. 9, Canadian Co-op Offers 200,000 Bushels of Oats.
- Page 10, Oct. 9, China Asks for Industrial Literature.

In the numbers dated September 18, September 25, October 2, and October 9, 1948, no mention is made of "Petroleum and Products." No word is devoted to either ferrous or non-ferrous metals. No information is found in the United States embassy airgrams about mining ventures or conditions, even from a country such as Chile, whose very economy is tied to her mineral industries.

Certainly no more innocuous items could be found than those that now appear in the magazine. Samples of the bland releases put out today are found in Table 2.

Why is the information being withheld that is funnelled into the two departments? No logical reason is evident. It may be that the well-meaning zealots in the high places have taken it upon themselves to withhold such information from the public for no legitimate reason. The men in the mineral industries know this information is available. Will they demand that it be released? Plenty of precedence exists for release of items pertaining to mines and minerals in the *Foreign Commerce Weekly* of previous years.

If the mining men of the United States ever deserved the privilege of knowing what goes on in the world relative to foreign mines, methods of extraction, and new discoveries, it is today, for with the search for all minerals intensifying and the growing realization of the advantages lying with nations in a self-sufficient position, so far as one or more minerals is concerned, the information is vital to our national well-being.

Molybdenum Firm Develops Claims in Washington

Encouraging ore occurrences are reported by Luke G. Bayley, president of Spokane Molybdenum Mines, Inc., which is developing a property 18 miles north of Davenport, Washington. So far, about \$200 thousand has been spent in opening the veins at the five claims which cover 40 acres in Lincoln County.

Present development work is from the lower tunnel, 200' above the camp site. At 70' from the portal, this tunnel has crosscut a vein 5' wide, showing higher molybdenite values than in the upper workings. The vein now has been drifted on for 276'.

A crosscut, driven 204' in a southerly direction, has cut three veins at that distance, one of which is 12' in width and containing high-grade ore in mineable widths. Drifting on this vein has proceeded 40'.

At a point 130' from the portal of the lower tunnel, another crosscut has been extended 120'. It is anticipated that the same 12' vein will be encountered in another 80' and that

with another 100', the main vein will be encountered.

When low-level development is completed to the main vein and a raise extended to the surface to provide for gravity stoping of ores, the company plans to start construction of a mill building to house a 500-ton plant. After some preliminary metallurgical research to determine the proper flow sheet, it is planned to install the first 100-ton unit.

New Lead Strike Made At Montana's Eldorado

A new lead vein has been discovered at the Eldorado mine, two miles east of Blackfoot City and eleven miles was of the Drumlummon mine in the Marysville mining district of Montana, it was reported recently. The strike, claimed by mining men in the district to be the biggest since the Drumlummon, was made when a 130' tunnel tapped the ore disclosed in a raise. The lead is 12' to 15' wide, and 20,000 tons is said to be blocked out on two sides.

Of too marginal a grade to ship to a smelter, the ore makes a high-grade mill head for a flotation plant, the operators report. O. M. Pollard, Ray Ramer, Dr. Penny H. Radley and Ora Guffey of Helena are leasing the mine from William McGillivray, owner.

\$1 Million Plant Nears Completion at Carlsbad

A million-dollar refinery to produce potassium chloride and potassium sulphate is getting its finishing touches from the International Minerals & Chemical Corporation at Carlsbad, New Mexico. This new plant, which will allow the company to enter new chemical markets, is expected to be in operation some time in February.

During 1948, the company also constructed two new fertilizer mixing plants and two sulphuric acid plants and opened its phosphate mine and processing plant near Bartow, Florida.

Kaiser Company to Erect Blast Furnace at Fontana

The fabrication and erection of a new blast furnace at Fontana, California, has been awarded to the Consolidated Western Steel Corporation, a United States Steel subsidiary, by Kaiser Company, Inc., of Oakland.

To be completed this year, the new furnace will have a rated capacity of 1,200 tons of pig iron and appurtenant facilities necessary to produce steel plate. It will be almost identical with the present blast furnace of similar capacity also fabricated and erected by consolidated Steel in 1942.

Justification for the Increase in the Price of Mercury

(The following is of especial interest to domestic mercury producers. Dispatch dated Madrid, Spain, December 10, 1948, and received in MINING WORLD office January 7, 1949. A free translation.—Ed.)

The European Mercury Cartel controlled by Spain and Italy, during the meeting held in mid-December in Zurich, Switzerland, reached accord on new prices per flask of mercury f. o. b. Spanish or Italian ports, according to the following scale:

First thousand flasks—\$70
Second thousand or fraction—\$67
Third thousand or fraction—\$65
Fourth thousand or fraction—\$63
All in excess of the fourth thousand—\$62.

Already these increases in price have had consequent repercussions in the interior market of the respective countries.

The persistence of these prices may be deduced by the reasons which have motivated the increase, which, no doubt, can be qualified as extraordinarily modest, taking into account the increase in prices of the other metals with respect to their prices before the war. The three metals, copper, lead and zinc, have increased 300 percent, 750 percent and 460 percent, respectively, while the price of mercury, whose principal producers are European, has not experienced sensible variation in the same lapse of time.

On the other hand, the elevation of living costs in Europe, even in those countries which have not suffered the direct consequences of the war, have been of great consideration.

In Spain, which finds itself in the same position, the increase in living costs and their repercussion on labor and prices of primary and manufactured materials may be deduced from the increase in the price of coal, which has been 350 percent. For example, in Asturias, where before the war costs of producing coal were 50 pesetas a mine car, today it actually costs 170 pesetas a car, and having taken into account this new price of coal, the increase in the price of mercury is considered perfectly justified by the circumstances.

In respect to Italy, the other principal European mercury producer, the rise in living costs is much greater, and it is thought that the above pointed out reasons justify the increase, which is qualified as a modest one, in the price of mercury and its duration, an increase which should have taken place some time ago and which it is supposed has been adjusted now when it was believed the stocks of mercury acquired by the consumer countries during the war had been exhausted.

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Our Industry Must Keep Powder Dry

- We bow in reverence to the memory of a fine gentleman and a mining industry leader who bowed out of our scene New Year's Eve—Philip Read Bradley, Sr. Philip Bradley, 73 years young, assayed high in gold of 1,000-fineness in what he gave to our industry while he was part of it.

- For another quadrennium we face tough sledding against the rampant anti-mining ideas of Washington, those already in Washington and those sure to be brought into the Federal scene. Of the picture-at-large, the gold-mining and strategic-metals-stockpiling corners smell the ripest at this writing; and with no real hope, with a Demo Congress hand-in-hand with Truman's cabinet and a possibility that Havenerot Harold Ickes will be snorting 'round again for four raucous years. Part of the Ickes Itch (caught by "Cap" Krug and Oscar Chapman—Chapman at least talked of as a successor to Krug) is to repeal the Federal mining laws and put all new mine "ownership" on a lease basis, with royalty aplenty to Government and no personal land-title, patented or otherwise. No real hope, either, for getting the SEC put back into pants of proper size and removed from the hair of legitimate small mine developers. So—we'll somehow have to battle through these four years. To educate the Public wouldn't cost the industry prohibitively—*why can't we get together on a workable plan to do just that?* We can't expect fighters like Senators Pat McCarran and George Malone, and Rep. Clair Engle, to do ALL our fighting for us. Let's collectively hop into the battle ourselves!

- Across the Sierra Fred Sears, Jr., geologist President of Newmont Mining Co., working "in closed circuit" with Director Jay A. Carpenter of the Nevada State Bureau of Mines, in late '48 came up with the finest contribution to Goldfield geological literature since Fred L. Ransome's USGS Professional Paper 66 (1909) and Sydney H. Ball's USGA Bulletin 308 (1907). Sears' work is the terse (24-page) Nevada Bureau of Mines' G. and M. Series No. 48, with map. With underground knowledge not had by Ransome and Ball, Sears deftly corrects certain errata in the older works.

- Bache & Co., international brokers, are buying, and selling to clients with faith in the Law of Supply and Demand, gold at \$39.50 per ounce 850-fine (that's \$46.47 for the pure metal). Naturally, they aren't losing money. Oddly, they have no West Coast office. It's a nice straw in the golden wind. That's "unprocessed" gold, remember. Recently A. Z. Hall of Johnnie, Nevada, sold (under Sec. 19, Prov. Regulations, 1930, Gold Reserve Act) mortared-out, clean lode-gold at \$45 an ounce, tho' it's only 90-fine, with flakes of quartz yet in it. Another straw in the breeze. Pat McCarran, Palone and Engle are fighting hard for a free gold mart. Give them all the moral support and real help you can. With \$23 billion of Au now cellared at Fort Knox, and mouths watering to do freak things with it, and one man sitting tight on the Treasury lid to block any upping of gold's price above pre-war \$35 (though mine-operating costs are up 100 percent in some phases) it burns mining men up to read that in less-paper money-minded countries gold legally sells up to \$100 an ounce. Well—what are we GOING TO DO ABOUT IT, Brother? Go right on "taking it lying down?" Think it over.

Addison N. Peart

MINING WORLD

LODE CAMPS LIVE LONGER

The saga of the gold rush is partly the history of camps that grew—and died—overnight. Rich Bar and Hornitos, French Gulch and Volcano, Aurora and Sutter's Creek—their stories are all the same. A rich strike—a rush to share in the excitement—a brief hour in the limelight—and then, oblivion. In fact, the towns with the most staying power, the ones that still flourish today, often started as mere waypoints en route to the really important diggings.

Back in '49, for example, Mokelumne Hill in Amador County was the biggest and rowdiest camp between Sonora and Placerville, rich in Mother Lode gold and notorious for its record of a murder every Saturday night for seventeen consecutive weeks. Jackson, on the other hand, although just eight miles away, was nothing more than a convenient stopping place between Drytown and the Mokelumne River. Yet today, Jackson is still going strong, while Mokelumne Hill has been a ghost town for almost a century.

Amador County was first explored in 1846, when Captain John Sutter led a party of Indians and whites to the region, and there built a sawmill to cut lumber for a ferry boat. Ninety-four years later, in 1940, L. L. Cuneo was dredging on his Sutter Creek ranch, uncovered an old sawmill which had been lying under twenty feet of gravel. Apparently it had been deserted during a flood, as tools were still lying around it, and it was complete even, to the wooden pegs used in place of nails. When unearthed, the mill was in perfect condition, but during the next few weeks, while the experts argued as to whether it was or was not Sutter's original sawmill, it began to disintegrate, mummy-like, at the touch of air, and finally fell completely to pieces.

Captain C. M. Weber was the first to discover gold in the Mokelumne River. This was in April, 1848, and it initiated a wave of prospecting that led to gold strikes in every gulch and stream from the Mokelumne River north to the American. At this time, Jackson was known as Bottileas—Place of the Bottles—and was nothing more than a spring, surrounded by the empty bottles which gave it its name. Although some Mexicans had mined there with fair success the water was its principal attraction, as in this region water was so scarce that claims were placed on a rigidly rationed schedule, under which each was allowed to clean up only once a day, at a set time. As late as 1850, the

camp had only seven houses, most of them empty.

But as the fabulous Mokelumne Placers began to peter out, the gold in the gulches above Bottileas started to look more attractive, and right in town, at the junction of the three forks of Jackson Creek, diggings yielded \$500 a day. By the end of 1850, the camp was renamed Jackson, and had achieved the magnificent total of 100 houses, including a hotel, the Brandy and Sugar, which sold bread for \$1 a slice, \$2 with butter. There was also a butcher shop, none too well-constructed apparently, as the many chinks in the walls were stuffed with hams, their shanks sticking out in every direction. Furthermore, Jackson—46 miles from Sacramento and 47 miles from Stockton—was a logical supply center for the Southern Mines, and with the increase in traffic, freight rates dropped from \$1,000 a ton in '49, to \$200 in '50.

Amador and Calaveras Counties were still one, with the County Seat located at Double Springs. How Double Springs had achieved this lucrative honor is uncertain, as the camp consisted of a single building, serving as saloon, store, hotel and courthouse. At any rate, Jackson coveted the title of County Seat, and decided to do something about it.

One fine morning, two men strode up to the Double Springs bar and ordered drinks all around. None accepted more eagerly than the County Clerk, a Virginian by the name of Colonel Collyer, who dearly loved

conversation with his liquor. Unfortunately, while the Colonel was regaling one of the strangers with his best stories, the other was perfidiously purloining the county archives, which he placed in a waiting buggy, and hurried off to Jackson. There, a shanty had been prepared to serve as a Court House, Smith, the County Judge was at hand to convene court, and, with no further ado, Jackson became the County Seat.

Colonel Collyer was outraged at this chicanery, particularly after he lost the next election for County Clerk, and he swore to kill Judge Smith on sight. The Judge, in alarm, took to wearing a gun. One day the two met on the street, and Smith shot and killed the unarmed Collyer. Smith was never tried for the murder, but public feeling ran so high that he finally gave up his office.

Meanwhile, Mokelumne Hill, now at the height of its glory, decided that it deserved the title of County Seat. A special election was called to decide the question, and Jackson became worried, as its population was far smaller than that of Mok Hill. Hoping to entice the bulk of the voters into their camp on election day, the Jacksonite corralled seven bulls and advertised a bull and bear fight for the occasion.

The bulls were kept under armed guard, but one night several Mok Hillians turned up with a bottle of whiskey and the guard had a couple of drinks too many. The next morning the bulls were gone and the fight had

Considered the best and most comfortable mode of traveling during the days described in the accompanying article, this Troy(?) coach's appearance, as well as that of the three teams of resting horses, bears evidence of an extremely muddy journey for a part of the day by virtue of mud half-way to the axle on the rear wheels and knee-deep on each horse.

Photo courtesy of Wells Fargo Bank.



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to be cancelled. Furthermore, Mok Hill rounded up most of the horses in the county. On election day, the Mok Hillians rode furiously from precinct to precinct, casting votes in each one. The total vote was far in excess of the population, and Mokelumne Hill, having the most horses, carried the day. But Jackson won out in the long run, for in 1854, Amador was made a separate county and Jackson became the permanent county seat.

Bull and bear fights, initiated by the Mexicans, were a regular Sunday attraction in the Southern Mines. Grizzly bears, although not uncommon in the vicinity, were difficult to capture, and were valued at between \$1,000 and \$4,000, so they generally were given an unfair advantage over the bulls. The latter were lassoed just before the fight, their horns shaved off, and then they were turned loose to face the bear in comparative helplessness. On one occasion, the indignant crowd created such an uproar that a fierce, young, enthusiastic bull was turned into the arena, complete with horns. Much to everyone's surprise, the bear won the fight anyway.

Staging started in 1853, on a schedule that took the passenger from Jackson to Drytown to Sacramento in one day—fare, \$20. It was no minor project to set up a stage line, as Concord wagons cost from \$600 to \$1,000, and Troy Coaches from \$2,400 to \$3,000. Drivers were paid \$150 a month, hostlers, \$100, while hay and barley cost \$100 a ton. There were no roads so the stages followed old Indian trails, zigzagging around dust holes in summer and mudholes in winter.

Jackson was famed throughout the gold country for its Hanging Tree, in the center of town. First to swing from its limbs was Coyote Joe, an Indian. Later victims included a Chileno, hanged for stabbing a woman, a Mexican, convicted of murdering two Frenchmen, another Mexican, who stabbed a Chileno, a Swede, who stole a horse, and three Mexican bandits. The last hanging occurred in 1855, and the tree was cut down in 1862, after it had been injured by fire.

In 1851, gold was discovered in quartz at the Ministers' Claim, so-called because of the vocation of three of the four owners. This was the beginning of a long and glorious history that brought Amador County's gold yield to an estimated \$300,000,000, as the most extensive quartz deposits in the Western Sierras are found in this region. Among the famous mines operating around Jackson was the ill-starred Argonaut, scene of the tragic disaster of 1922 when 47 men were trapped underground by fire. Today, although only the Central-Eureka is in operation, Jackson is still a lively town, with around 24 bars for a population of 2,000, and wide-open gambling that is reminiscent of the gold rush at its peak.

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MINING WORLD

MINING MEN AND THEIR ACTIVITIES

About men who are well known and prominent in American metal mining circles

P. D. I. Honeyman, general manager of Inspiration Consolidated Copper Company, has been re-elected chairman of the Arizona Section, American Institute of Mining and Metallurgical Engineers. Other officers include: Albert Mendelsohn of Cananea, Sonora, Mexico, first vice chairman; Wesley P. Goss, Superior, Arizona, second vice chairman; and B. J. Messer, Miami, Arizona, secretary-treasurer.

J. Roy Browning, vice president of the Illinois Coal Operators Association, was recently elected president of the Illinois Mining Institute.

C. Y. Garber of Kellogg, Idaho, general mill superintendent for Bunker Hill & Sullivan, has been chosen 1949 president for the Columbia Section of the American Institute of Mining and Metallurgical Engineers. Other newly elected officers are: Howard P. Sherman, Spokane, and Joseph A. Mecia, Patterson, Idaho, vice chairmen; L. A. Grant, Wallace, secretary; and Harry W. Marsh, Boise, and Harold Kirkemo, Spokane, assistant secretaries.

Harold A. Krueger, Baxter Springs, Missouri, has been elected chairman of the Tri-State Section of the American Institute of Mining and Metallurgical Engineers for 1949, succeeding O. W. Bilharz. Ernest Blessing of Miami, Oklahoma, was named vice chairman and J. C. Stipe secretary-treasurer.

John K. Gustafson, manager of the Atomic Energy Commission's Raw Materials Operations Office, has announced the appointment of Thorold Field of Duluth, Minnesota, and Orvil R. Whitaker of Denver, Colorado, both consulting mining engineers, to the AEC's Advisory Committee on Raw Materials.

E. A. Friedman, general superintendent for the Oliver Iron Mining Company in the Coleraine district, has been elected president of the Engineers' Club of Northern Minnesota for 1949. J. R. Stuart, chief engineer of the Meriden Iron Company, was elected vice-president, and W. P. Wolff, chief engineer of the Oliver Iron Mining Company in the Hibbing district, was named secretary-treasurer.

Lawrence E. Smith, formerly with the U. S. Geological Survey and now a geologist for the North Range Mining Company, is dividing his time between the Book mine at Alpha, Michigan, and diamond drill work at the Warner mine near Amasa which the company hopes to restore to production.

Wilbur J. Guay, Montana School of Mines graduate, is now metallurgist for the Howe Sound Mining Company at Helden, Washington.

Willis E. Rodeniser, Melvin A. Cheney, and John F. Schultz, veterans of the Homestake Mining Company, Lead, South Dakota, retired in mid-December after serving the company in the metallurgical department for 41, 40, and 38 years, respectively. All three men expect to remain in Lead.

W. H. H. Cranmer, president and general manager of the New Park Mining Company, Keetley, Utah, has been named president of the Utah Mining Association. He succeeds James Ivers, vice-president and general manager of the Silver King Coalition Mines Company.

Harry S. Peterson of Ishpeming, Michigan, general superintendent for the Jones & Laughlin Ore Company, has been elected chairman of the Lake Superior section of the A.I.M.E. for 1949. Roy W. Drier of Houghton is secretary-treasurer.

George H. Ryan of Salt Lake City is now superintendent for the Castle Mountain Mining Company, operating in the Austin district of Nevada.

Jean M. Peters, prominent Northwest mining engineer and consulting geologist, recently released from the veterans' hospital, is now making his headquarters at the Weiser Assay office, East Idaho Street, Weiser, Idaho. His present plans include geological consulting work and surveying in the Seven Devils country. During World War II, he served as chief liaison officer with the Ninth Air Force.

Paul A. Bundy, mining engineer of Nevada City, California, recently completed an examination and sampling of the Copper Bluff mine at Hoopa in Humboldt County, California.

Edward P. Scallon, formerly in charge of the land department of Butler Brothers' Minnesota iron mining interests, has established offices as a consulting mining engineer at 137 East Eighth Street, St. Paul.

Richard R. Matthew, Virginia City, Montana, county surveyor and mining engineer for the U. S. Grant Mining Company, has been elected president of the Madison County Mining Association. George E. Hubbard of Twin Bridges, lessee of the Cornercracker mine in Georgia Gulch, was made vice-president.



KENNECOTT'S MOFFAT AND SHILLING RETIRE

Retirement on December 31, 1948, of D. D. Moffat, vice-president and general manager, and J. D. Shilling, assistant general manager of Kennecott Copper Corporation's Utah Copper Division, has been announced by E. T. Stannard of New York, Kennecott president. Beginning January 1, general supervision of Utah Copper Division operations was taken over by J. C. Kinnear, Kennecott's vice-president, who had been in charge of Kennecott operations in Arizona, Nevada and New Mexico, while Louis Buchman was appointed general manager to succeed Moffat. Stannard also announced the appointment of E. W. Engelmann as assistant general manager succeeding Shilling.

Left to right: D. D. Moffat; J. D. Shilling; J. C. Kinnear.

J. B. Crowley, formerly of Gallup, New Mexico, is now situated at Dove Creek, Colorado, where he is developing several of his carnotite claims.

Charles A. Kumke, formerly with the Oil Shale Mining Division of the U. S. Bureau of Mines at Rifle, Colorado, has been transferred to the Tucson, Arizona, branch, where he will serve as a mining engineer. His temporary address is Box 4097, University Station, Tucson.

Louis B. Morgan has succeeded the late **Matthew R. Rosse** as manager of export of The Colorado Fuel and Iron Corporation and subsidiaries.

J. C. Madson, recently retired general superintendent of Jones & Laughlin's Benson mines at Star Lake, New York, has been visiting the Pacific Coast before returning to New York, where he will make his permanent home.

Wylie Brown, president of the Phelps Dodge Copper Products Corporation, has been elected chairman of the board and will continue as the firm's chief executive. Succeeding him as president is Whipple Jacobs, formerly of the Belding Manufacturing Company of Chicago. Brown has been president of the copper fabricating concern since its founding.

Burt C. Mariacher has resigned his

position with the Consolidated Feldspar Corporation at Canon City, Colorado, to become associated with the Western-Knapp Engineering Company. He may be addressed c/o the firm at 50 Church Street, New York 7, New York.

Elmer H. Olson of Pittsburgh, Pennsylvania, is now located at Ishpeming, Michigan, as resident engineer for the Jones & Laughlin Ore Company.

Wesley P. Goss was recently elected vice-president of the Magma Copper Company at a board of directors' meeting in New York. He was also named vice-president of the San Manuel Copper Corporation. His new title for both organizations, operating in Arizona, will be vice-president and general manager.

Jesse H. Horn, shift boss for the Climax Molybdenum Company, is now residing at 208 Bartlett Street, Climax, Colorado.

Robert F. Barney, engineer in the production department of the Stearns-Roger Manufacturing Company, has been transferred to Carlsbad, New Mexico, and may be addressed at 194 Shayer Apartments.

James W. Wivell, mining engineer, has joined the Pickands, Mather & Company staff at the Embarrass iron mine while **D. W. Carlton**, mining en-

gineer, has joined the company staff at the district office in Hibbing, Minnesota.

Roy G. Stott, mining engineer of the U. S. Bureau of Mines Duluth, Minnesota office, has been transferred to the Wilkes-Barre, Pennsylvania office in the anthracite coal mining district.

Russell C. Fish, general manager of mines for the M. A. Hanna Company, has announced that **Duane S. Myers** will succeed **Walter Dewald** as superintendent of the Iron Mountain mine in Missouri.

George M. Grismer has been named president of the Western Silver-Lead Mining Company, Wallace, Idaho, at the company's first annual stockholders meeting. Other officers elected were: **Claude Nugent**, vice-president; **Margaret Denny**, secretary-treasurer; Harry Magnuson, assistant secretary-treasurer, and **Louis Johnson**, director.

Elmer R. Dredahl, mining engineer, has been transferred from the Ishpeming, Michigan, office of the Jones & Laughlin Ore Company to the Vicar mine where he will be resident engineer.

T. R. Weichel, formerly of the U. S.

(Continued on Page 63)

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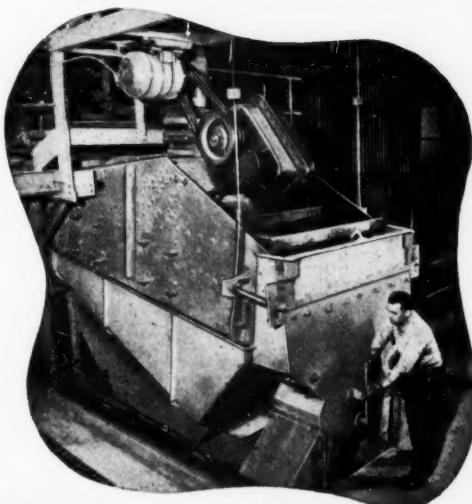
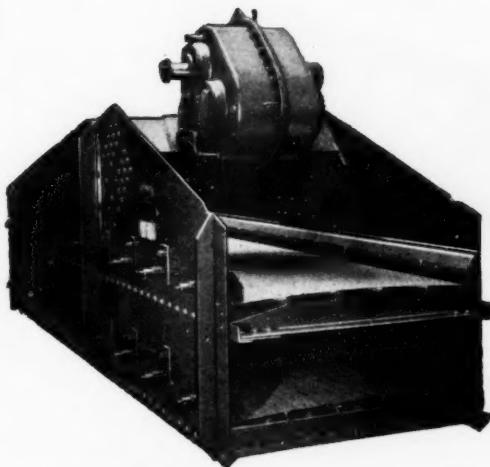
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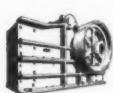
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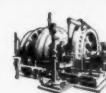
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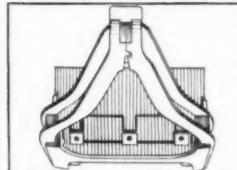
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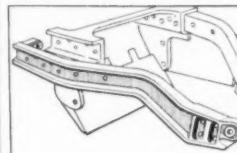
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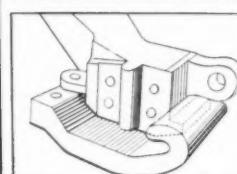
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boulders and lift
scraper off load



TAPER FIT
... puts tug load
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castings — takes
stress off bolts



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... locks position
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— prevents mis-
alignment of arms
under load

**INTERLOCKING
FITS**
... provide one-
piece rigidity.
Wherever castings join, such as lip and body, taper
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damage in use

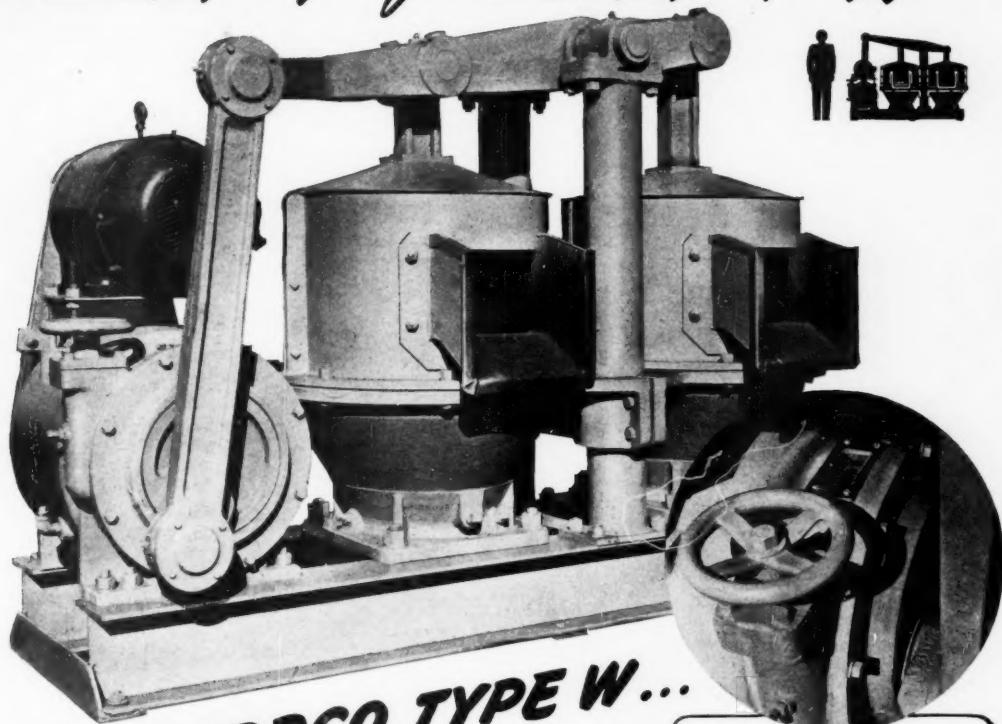
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FEBRUARY, 1949

[World Mining Section—3]

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WORLD MINING

The International Department of MINING WORLD

SAN FRANCISCO, CALIFORNIA

FEBRUARY, 1949

INTERNATIONAL PANORAMA

SPAIN—The Spanish-Italian quicksilver producing combine, Mercurio Europeo, raised the price of mercury \$14 per 76-lb. flask f.o.b. Spanish and Italian ports. The new price is \$70 per flask.

WASHINGTON, D. C.—An additional \$20 million credit was extended by the U. S. Export-Import Bank to defray increases in the costs of services, materials, and equipment to complete the steel plant under construction at San Vicente Bay, near Concepcion, Chile.

SOUTH AFRICA—A new scheme for assisting Southern Rhodesian gold mines without directly increasing the gold price is under consideration following the recent sharp criticism of the government's action by the International Monetary Fund.

TURKEY—The M. A. T. has completed one phase of its prospecting program consisting of a preliminary surface examination of all the known and newly discovered mineral occurrences in the country.

BRAZIL—The cooperative mineralogical-geological survey program between the United States and Brazil has been extended for a 10-year period.

COLORADO—The Mineral Engineering Company, Grand Junction, Colorado, has been awarded a contract for 30,000 to 40,000' of core drilling in the Outlaw Mesa uranium mining area in Mesa County.

WASHINGTON, D. C.—Opposition to the St. Lawrence seaway is subsiding as the M. A. Hanna Company has come out in favor of the project. This followed upon the announcement that Hanna, with Hollinger Consolidated Gold Mines, Ltd., of Canada, considered it important that Midwest steel plants have the advantage of seaway transportation to maintain present competitive locations.

CHILE—From the end of the year until the present writing, the entire industry in Chile coasted in slow gear awaiting the promulgation of the so-called Gold Law that will enable mines to sell gold on the free market. Luxury goods may be purchased with the returns of the gold sales.

ARIZONA—Construction of a \$175,000 selective flotation mill to handle 300 tons daily is getting under way near the Golconda mine, just below Kingman. The new custom mill was financed by Basic Metals, Inc., of Arizona.

MEXICO—The Banco de Mexico has notified all silver producers in the Republic that it would purchase all or any fraction of the January production of refined silver from the nation's mines. It will be used for coins.

AUSTRALIA—With lead commanding a price of more than A£100 on the open market, domestic producers may be compelled to sell 50,000 tons of their 1949 production for A£22 by the Labor Government now in power. This is the same price paid since 1939. The current price in gold is 3.17c per pound in Australia compared with 21.50c in New York, and 20.13c in London.

NEW YORK—At this writing, tension is increasing over the domestic and world supply of copper and it is known that as much as 29c a pound is being paid for copper in quantity in New York City.

UTAH—With the largest copper mine in the United States strike-bound for the twelfth week by members of the Brotherhood of Locomotive Firemen and Enginemen, the nation has been deprived of about 60,000 tons of copper at this writing.

INDIA—Manganese ore was among the list of exports to Japan in a recently announced trade agreement between India and Japan.

LONDON—Plans for the construction of a copper refinery to be built in the Rhodesian copper belt have been announced by A. Chester Beatty, chairman of the Mufulira Copper Mines. To have an initial annual capacity of 36,000 tons of electrolytic copper, the plant will cost an estimated £1,500,000.

WASHINGTON, D. C.—The United States Export-Import Bank has granted a loan of \$5,000,000 for further development of the Steep Rock iron ore deposit in Ontario, Canada.

MANITOBA—A zinc fuming plant is to be built at Flin Flon by the Hudson Bay Mining and Smelting Company at a cost estimated between \$5,000,000 and \$6,000,000. The plant is expected to be in operation within two years.

BRITISH COLUMBIA—A mine and milling plant estimated to cost \$1,000,000 is being built at the Reeves-MacDonald property near the American boundary to handle zinc-lead ore. The plant will be of 1,000 tons daily capacity.

NEW YORK—The demand for metallurgical chrome ore has eased considerably in the United States recently, prices reflecting this attitude of the market. The falling off in demand is attributable in part to the fact that the Government is said to have completed its stockpiling program for the current fiscal year.

\$5,000,000 Loan Granted Ontario Iron Ore Firm

The export-import bank, Washington, D. C., has announced the granting of an additional \$5 million loan to Steep Rock Iron Mines, Ltd., for development of iron ore deposits in southwestern Ontario, north of Duluth, Minnesota.

Development of the company's mines is viewed as benefiting both Canada and the United States; Canada will get U. S. dollars from the sale of the ore, and the United States will get upwards of 3,000,000 tons of high-grade iron ore annually.

Under terms of the agreement, the total debt of \$10 million will be secured by a first mortgage on all property of the company and will be repayable at 4½ percent interest in annual installments ending in 1960.

The Reconstruction Finance Corporation, which loaned the firm its first \$5 million, joined with the bank to further the transaction.

American-Mexican Combine Will Boost Silver Output

Mining production, mostly silver, will be upped an estimated 30 percent in Mexico's state of Guerrero as a result of intensified operations by an American-Mexican combine which is merging two mining companies.

This announcement was made in Mexico City by Ing. Manuel Franco Urias, president of Cia. Minera Concepcion, Carmen y Anexas, S. A., which has merged with Cia. Minera de Mezcal, S. A., Charles L. Bradbury, manager.

A sum of 2,000,000 pesos (\$290 thousand) already has been provided by the Americans for the undertaking which will feature shaft and tunnel drilling to open promising ore bodies. Machinery and equipment has been purchased in the United States for this work.

According to Urias, capitalization will ultimately reach 35,000,000 pesos (about \$5 million), and maximum production is expected within one to two years.

Australian Zinc Firms Plagued by £22 Price

Australian zinc producers were given no relief by a conference of Prices Ministers from Victoria, New

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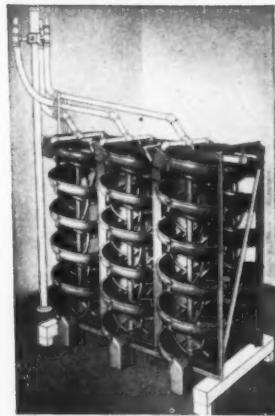
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South Wales, Tasmania and the Federal Government which left the price still pegged at £22 per ton (Australian currency) against a United Kingdom price of about £70 per ton (English currency).

Addressing shareholders of the Electrolytic Zinc Company of Australia, Sir Walter Massy-Greene stated that some producers, including Zinc Corporation, Ltd., and Mt. Isa, Ltd., had been allowed to export the whole of their production. This left North Broken Hill, Ltd., South Broken Hill, Ltd., and Electrolytic Zinc, which together produced less than half the total zinc concentrate for Australia, to meet the full burden of an increased Australian demand. In effect, he said, these companies had subsidized the Australian economy to the extent of about three million pounds per annum.

It is reported that the companies will retaliate for the refusal to increase local prices by cutting supplies to the home market by 50 percent. If this proposed cut actually goes into effect, it is anticipated that the States will appeal to the Commonwealth Government to prohibit or regulate zinc exports and enact legislation to control internal distribution.

At the latest report, negotiations between producers and the government were still going on in hope of finding a workable solution.

ECA Backs Greek Lead-Zinc Venture

With United States-sponsored ECA backing, the Canadian-controlled company, Mediterranean Mines, Ltd., is rehabilitating the Greek Laurium lead-zinc mine, 35 miles south of Athens, with a view toward placing the property in production by the end of the year.

Following an examination of the property, plans were laid for the installation of a 200-ton flotation mill to treat known reserves of sulphide ore and to retreat tailings which have accumulated since the start of operations in 1860.

Cost of the proposed installation is estimated at \$630 thousand. Of this amount, \$435 thousand is being obtained as a loan from the Bank of Greece, negotiated through ECA. Machinery and equipment will be of 50 percent Canadian and 50 percent American origin.

Mediterranean Mines, of which W. G. Hubler of the Canadian firm, Ventures Ltd., is president, undertook examination of these deposits after the Germans had been driven out of Greece in World War II. The examination revealed reserves of approximately 200,000 tons of sulphide ore, having an average grade of bet-

ter than 5 percent lead and about 60,000 tons of better than 8 percent.

In addition, there is an estimated 300,000 tons of tailings, believed to average 4.5 percent lead and 4.5 percent zinc; 500,000 tons of slime that will run about the same grade, and 1,700,000 tons of around 2.5 percent lead.

The concession held by Mediterranean Mines covers an area of 20 sq. mi., the greater part of which has not been prospected, and plans call for a diamond drill program as soon as the property is returned to production.

Keno Hill Reports Major Ore Discovery in Yukon

What is believed to be a major mineral discovery has been reported by United Keno Hill Mines, Ltd., operator of several silver-lead properties in the Mayo district of the Yukon. The vein was found on Keno Hill, entirely separated from the present Hector Calumet mine workings on Galena Hill.

So far, the vein has been established for a length of 400', with an average 11' width reported. Bulk sampling is said to have returned values of 10 to 20 percent lead, 10 to 15 percent zinc, 50 to 100 oz. silver and 0.3 to 0.5 oz. gold per ton.

The vein is too far from the company's Elsa mill for treatment there, and an entirely new mining operation may be in the offing. In the spring, the company plans to drive an adit some 700' on the new vein, providing about 200' of backs. The company also has plans for the addition of a cyanide unit to the Elsa mill, to be in operation by June.

First Phase of Turkish Mineral Survey Completed

The M. T. A. Institute has completed the first phase of its prospecting program, which consisted of a preliminary surface examination of all the known and newly discovered mineral occurrences in Turkey. Under this program, adopted since Ihsan R. Berent became general manager of the institute, the whole country has been submitted to a general mineral survey.

Now, with all known mineral deposits roughly examined and classified according to their prospective values, it is planned to set up exploration camps at the most important properties next summer.

Deposits of chromite, copper and bauxite predominate and will be thoroughly examined as to their possibilities for commercial operation.



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Left: Skid mounted jumbo ready to begin drilling. The time saving attained by the use of this type of equipment is enormous and drilling the round is speedily accomplished once the columns are erected and the air and water hoses connected. Right: Skid mounted jumbo in folded position at the face of a working. The jumbo is moved into position so far as is possible by using a tugger hoist for motive power. Note the sturdy construction of the skids and the hitch to which to anchor the tugger line.

BUNKER HILL'S MECHANIZATION

The change from hand mining methods to the recently developed mechanized operations are described in this up-to-the-minute paper

It is a far cry from the present mechanized mining of the Bunker Hill and Sullivan Mining and Concentrating Company to the day when mining was accomplished by holes laboriously hand drilled to a depth of three feet that were shot one or two at a time so that the miner could take advantage of every crack, slip, or bedding plane, and so save as much drilling as possible.

By R. S. Hooper

Mine Superintendent
Bunker Hill and Sullivan
Mining and Concentrating Company

Broken ore, naturally, was loaded by hand-shoveling into wheelbarrows or small cars. Advances in headings and stope tonnages were controlled by the number of men that could find space to work in any given place.

A model 21 Eimco mucking machine at the face of a working. Machines of this type move the muck out at a rapid rate and accelerate the advance of lateral workings. Fragmentation, as shown in this picture, is excellent.



The introduction of the reciprocating type of air-propelled rock drill was the first improvement over the old methods. This departure from the standard practice of the times, crude as it was, enabled a crew of miners to set up a machine and drill a complete round of holes in one shift. However, broken ore was still loaded by hand, and the restrictions regarding the size and rate of advance still were limited by the time necessary to remove the broken rock.

The Hammer-Type Drill

The next improvement of consequence was the appearance of the hammer-type rock drill with its greatly increased speed over the reciprocating type. Use of this type of machine made possible the completion of a full cycle of operations in one shift by the use of crossbars in headings and working places and this factor permitted drilling and mucking to be carried on at the same time.

As time passed, rock drills continued to improve, smaller and more efficient mucking machines finally appeared, and it became possible to muck out a round of broken rock and have a clean set-up for one or more drill columns and machines. A cycle of mucking, drilling, and blasting could be completed in one shift and the average advance increased to five feet.

The conditions recounted above

THOR MODEL 75
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RECOMMENDED
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FEBRUARY, 1949

[World Mining Section—9]

prevailed for several years, but with the mine growing deeper, the distances to transport the workers grew longer, and these facts, in conjunction with the shortening of the working day, brought into focus the need of completing a cycle of operations in a six-hour shift at the working places.

The Answer: Mechanization

To combat these conditions, the operating heads of the Bunker Hill had begun an intensive study of more and better mechanization. Methods and machines have been placed in service over a period of comparatively few years that make it possible for a three-man crew consistently to advance headings seven by nine feet in a cross section at the rate of eight feet, and more, per shift, performing all mucking, drilling, loading, and switching.

These improvements are made of the following major items:

1. The development of a light, flexible, easily transported jumbo, equipped with pneumatic columns. These jumbos have been developed at the Bunker Hill mine by members of the staff and consist of two pneumatic columns attached to a suitable carriage which has reduced the "setting up" and "tearing down" time an average of 1½ hours per shift or 25 percent of the available working time. The jumbos fold up easily for trans-



The "cherry picker" is used to facilitate the operation of mucking machines. Swung out of the train by the machine, the empty car is hooked onto the end and is ready to be loaded by the operator. The "cherry picker" shown here can be installed with a minimum of time and labor.

porting and when set up require no roof jacks or track clamps, as all the weight of the machines is carried on the columns. The weight of our jumbos, including two DA-35 automatic feed drifters, is 2,200 lbs. A safety feature is the Ingersoll Rand check valve installed on each column that prevents collapse in case of air failure. These jumbos have been pat-

ented and are sold by Ingersoll Rand Company.

2. The installation of slusher systems that have nearly eliminated hand mucking. The slusher hoists are mounted on turntables that can be set at any angle through the full 360 degrees.

3. The common use of mucking machines throughout the mine. Machines are larger and faster and the types used are Gardner Denver model GD 9 and Eimco 12 B and 21. Now used in headings, the model 21 proves highly adaptable where rapid advance is desired, as the mucking cycle is definitely shortened by the use of the larger machine.

4. Larger, heavier locomotives with greater storage battery capacity. Our locomotives for heading work are 6-ton machines, and are normally equipped with a battery of 72-A8 Edison cells. Some batteries are now being equipped with 84-C7 Edison cells with a consequent increase in power and capacity. Level haulage locomotives are now 8 tons.

5. The use of small, light, and comparatively inexpensive compressed air locomotives that operate from our regular air pressure of 85 psi. These are used in wide, flat square set stopes where fill must be trammed and placed by hand-trammed cars.

6. Simple, efficient "cherry pickers" that can be installed with a minimum of time and labor. Also developed at the Bunker Hill mine, these "cherry pickers" consist of an I-beam of suitable cross section suspended from the back of the drift which is equipped with a crawl and an air cylinder. Cars are raised from the rails by the air cylinders and are pushed to one side to clear the tracks and require only space enough for

Left: Single column in upright position with arm mounting. Right: Single column machine assembly showing automatic feed drifter.

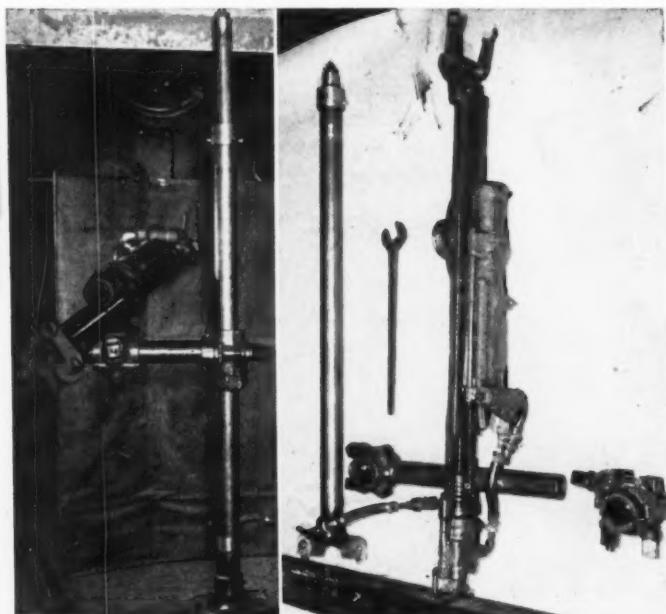


Table No. 1

Leave portal	7:15 a.m.
Arrive level	7:52 a.m.
At work	7:53 a.m. Take train from station
Start mucking	8:01 a.m.
Mucking finished	9:30 a.m. Dumped last cars; got steel, bits and jumbo
Arrive face	9:30 a.m. Connect hoses; set up jumbo
Start drilling (2 machines)	9:54 a.m. One man goes for powder during drilling time
Finish drilling	11:36 a.m. 22 holes for 7-ft. round
Tear down and remove jumbo	11:41 a.m.
Start loading	11:45 a.m. Using electric delays
Finish loading	12:04 p.m.

one car to pass the rest of the train.

7. Greater car capacity, thus reducing switching and trammimg time. Cars vary from $2\frac{1}{2}$ to 5 tons capacity and are of the bottom-dump type. They are built and repaired in our own shops.

8. Use of heavier steel for haulage tracks, thus allowing the hauling of heavier loads and greater speeds. Steel ranges from 30 to 85 lb. section, lighter sizes being used in crooked drifts and on sublevels and the heavier sections for main-line haulage.

9. Air lines of ample capacity to maintain good working pressure. Eighty to 85 lbs. working pressure at the machines is considered standard.

10. Automatic feed machines and detachable bits. Several makes of machines are used in the mine, but all jumbos are equipped with Ingersoll Rand DA-35 power feed drifters. Detachable bits are Ingersoll Rand "Jack Bits" and are reconditioned in our shops by hot milling and a salt draw. We are now experimenting with both "Carset" and throw away

type bits, and we believe that both types will have an application in our operation.

11. Improved ventilation of all headings, with spot coolers provided in the warmer places, the cooled dehumidified air being conducted to the faces through metal ducts.

12. Improved cycle of operations.

Crosscut Time Study

A time study of a typical crosscut, driven through medium-hard quartzite seven by nine feet in cross section, is demonstrated in Table No. 1.

An incentive system has been tried employing capable men in two-man crews, and headings have been advanced at a rate of over eight feet per shift in rock and six feet in timbered drifts. All work, such as mucking, switching, drilling, and loading, is performed by the two-man crews.

Upon the miners completing the round, tearing down the drill, and cleaning up, the track crew starts advancing permanent track. When the track is laid to the face, the track men throw the blasting switch, as they are the last crew to perform work in the heading. The drift crews are allowed to leave the mine upon completing their cycle of work.

In slusher and scram drifts where no tracks are laid, the pneumatic column jumbos are mounted on skids and are moved to and from the working faces by the same slusher hoists that are used to muck out the broken rock. In some working places, three-man crews have advanced five by seven headings at a rate of over 10' per shift, this crew doing all drilling and slushing.

Sinking, Raising and Stoping

Pneumatic columns have been adapted to shaft sinking up to 50 degrees. Power-feed drifters are



Erecting a track mounted jumbo is a relatively simple task after the air hose is connected. In this picture the drills are in position for operation. As can be seen, no blocking is needed in the routine setup either at top or bottom of the column.

mounted on the columns and lugged steel and detachable bits are employed as in drifting and crosscutting. Raising also is accomplished by using this type of equipment and in the mining areas stoper-type machines seldom are seen in use.

The square set and fill method of stoping is employed in the Bunker Hill and here, too, the pneumatic columns are in general use. Single columns are employed and furnish a safe, steady, and quick setup for 3 or $3\frac{1}{2}$ " drifters of either the hand-operated or power-feed type.

Prior to this time, the saddles were mounted directly on the pneumatic columns and drills were operated on their sides. At first thought, consequently, this practice might suggest that excessive wear would result on the drill guides and shells, but careful checking has proved that such is not the case.

Single pneumatic columns equipped with standard arms and used with drifters are going into service in the stopes and give every promise of operating successfully. These single stope columns not only are used with saddle mounting, but are equipped with the safety check valve, previously mentioned. These columns, when correctly set up, resist twisting as well as a screw-type column and never loosen, as air pressure keeps them secure at all times. The six-foot pneumatic model weighs 91 lbs. as compared with a weight of 125 lbs. for the standard six-foot screw-type column.

The many and varied adaptations of the pneumatic column have resulted in one of the greatest savings

(Continued on Page 62)

Slushing broken ore to a raise in the Bunker Hill. This slusher hoist and scraper will muck many tons of broken ore hourly. Performance is high and upkeep remains at a minimum.





The old '49ers never imagined anything like the picture of modern San Francisco shown here and chosen as the site for the 1949 AIME convention. Perhaps if the new '49ers could return a century hence, this modern city, too, would be archaic.

MINERAL POTENTIALITIES OF PACIFIC COAST STATES TO BE EMPHASIZED AT AIME MEET

For the second time in history a trek of miners to California begins this month. The occasion is the 77th annual meeting of the American Institute of Mining and Metallurgical Engineers, to be held in San Francisco, February 13 to 17, an even century after the first '49ers, most of them unlettered, crossed the plains with ox teams, braved the malaria and dysentery of the crossing of the Isthmus of Panama, or the Cape Horn weather to reach the land of gold.

By way of contrast nearly all of this year's migration of miners will be men with degrees from accredited mining schools and universities and all of them will arrive by plane, streamlined train, motor car or bus, but basically their interests are the same as the original '49ers—the mining, recovering, and processing of precious, ferrous, non-ferrous, and non-metallic metals and ores at the lowest possible cost for the greatest profit.

Great credit is due to William Wallace Mein, Jr., general chairman of the meeting committee. By his institution sixty-six technical sessions are scheduled and about 150 papers are scheduled, representing the thinking of the following divisions of the AIME: Iron and Steel, Coal, Mineral Education, Institute of Metals, Petroleum and Mineral Beneficiation.

Lewis E. Young, the incoming president of the AIME, is well known

to nearly all men connected with the coal industry and has international recognition for the outstanding work he has done in the development of coal and nonferrous mineral properties. He has maintained headquarters as a consulting engineer in Pittsburgh, Pennsylvania, for many years.

Other papers of particular interest are scheduled which will treat of mining methods, health and safety in mines, mining geology, geophysics, reduction and refining of lead, zinc and copper, and ferro alloy ores, mineral economics and research, gold as money, and others of a broader and more general nature.

Emphasis will be stressed in a number of the sessions of the tremendous increase of population in the west and the potential demand for all types of mineral commodities resulting from this with pointed reports as how to bring production abreast of current demand and how to provide minerals and fuels for a greater population.

Principal speaker at the All-Institute banquet on February 16 is to be Dr. Robert Gordon Sproul, president, University of California. Reese Taylor, president, Union Oil Company of California, will address a special meeting of the AIME Petroleum Division on February 15. In connection with fuels, Albert L. Toenges, principal coal mining engineer, U. S. Bureau of Mines, is scheduled to present a paper on coal mine development in Alaska.

The annual Institute of Metals lecture will be delivered by Egon Orowan of Cambridge University, England. The Howe Memorial Lecture, which has been given each year since 1924 by "an individual of recognized and outstanding attainment in the science and practice of iron and steel metallurgy or metallography," will be given by John Chipman, head

department of metallurgy at Massachusetts Institute of Technology.

Also scheduled are papers on the industrial minerals of the West and their growing consumption. Western phosphates will receive particular attention. Other papers of outstanding interest to the Pacific Coast states are promised on the processing of limestone, aggregates, and other non-metallics, alkali aggregate reaction, and fuel economy in the cement industry.

San Francisco has more places to go to and more things to see than most American cities and the visiting ladies will be royally entertained and promised a full schedule of sightseeing and function by the Women's Auxiliary of the Northern California Section of American Institute of Mining and the Metallurgical Engineers, under the general chairmanship of Mrs. H. Robinson Plate.

Members of the AIME are urged to pre-register at the hotel of their choice as soon as possible as rooms are being spoken for rapidly. To co-operate with out of town members, checks and reservations can be sent with advance members' registrations that will insure seats at all of the scheduled social events which include a welcoming luncheon on February 14, a Valentine's Day dinner on the same day, a stag-smoker on February 15, and the All-Institute banquet on February 16.



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Jr., general chairman,
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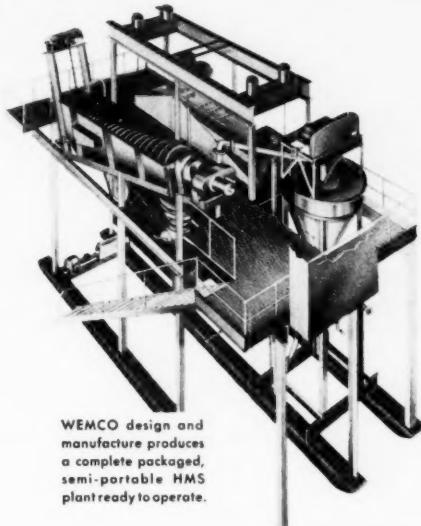
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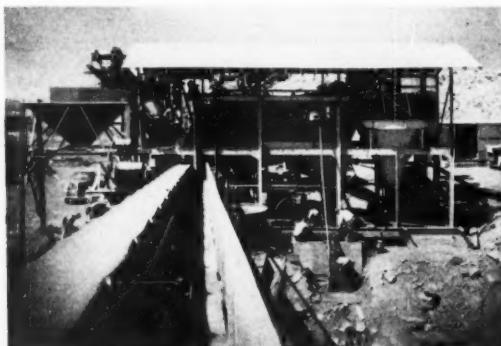
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The Burnt Creek camp of the Hollinger North Shore Exploration Company and the Labrador Mining & Exploration Company on the prospecting concession along the Quebec-Labrador boundary. As can be seen from the photograph, the country has been glaciated and the summits of the hills are concordant. All supplies are brought in by airplane. Note the Quonset-like structures.

THE IRON MINERS TURN NORTH

With 300,000,000 tons of proved up ore, the building of a railroad is the next step in the development of these important deposits

Hollinger North Shore Exploration Company and Labrador Mining & Exploration Company working together in the development of iron ore deposits in Quebec and Labrador, expect to have at least 300,000,000 tons of ore developed by this fall, according to W. H. Durrell, general manager of the two companies.

Mr. Durrell says that directors of the organization decided that this volume would be sufficient to warrant the large capital expenditure required to bring the properties into production and provide transportation facilities.

Huge Capital Outlay

"Estimates are not complete," says Mr. Durrell, "but a rough guess would be that approximately \$200,000,000 will be required for the overall project. We will probably continue our drilling operations until the end of the season, but we are quite confident, through known results to date, that our objective will be reached and probably passed."

Not long ago Mr. Durrell visited the mines of the Mesabi and Cuyuna ranges in Minnesota. "In places out there they are stripping up to 150 feet of overburden to uncover the ore deposits, and as only a handful of the 522 mines in that region were discovered from surface deposits, I would venture to guess that mines will be found along our range for the next hundred years as development work is continued in the overburden areas."

Ore in Unexpected Places

Mining, according to Mr. Durrell, will be the least of their problems because it will be entirely an open pit operation. Stripping can be kept at a minimum as there is only a very few feet of overburden. It may be significant that during the past summer when bulldozing roads to some of the known surface deposits in many places just a foot or two below the surface high grade ore was uncovered which might develop into considerable tonnage, but as yet there has been no opportunity to investigate these discoveries.

Another instance occurred last summer when a new churn drill was set up behind the machine shop to be tested, and which after drilling two or three feet encountered ore. The hole was continued to a depth of 367 feet and it was still in high grade when stopped. It was later found that the entire base camp was over this ore body.

"We'll certainly drill the area

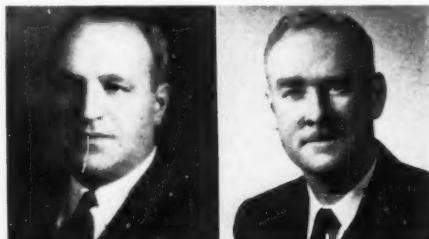
where we propose to put our new townsite as we do not want a repetition of this," says Mr. Durrell.

Ore for English Plants

After conditions become more normal, it is expected that two to three million tons of ore will be shipped to the United Kingdom, as at present that country is importing between eight and nine million tons of high grade ore, mostly from Sweden and North Africa, and itself mining 14 million tons of low grade ore running from 22 to 44 percent iron, and it is possible that if the Canadian ore can be delivered cheaply enough it might be preferred.

"We are miners, and we will have our hands full bringing the properties into production," says Mr. Durrell, "and in mining and hauling 60 or 70 thousand tons of ore per day. We don't see how we can branch out into the steel industry at this time, but we would be happy to supply any steel industry which may be established along the St. Lawrence or

Left: Jules R. Timmins, president, Hollinger North Shore Development Company and the Labrador Mining & Exploration Company. Right: W. H. Durrell, general manager, Hollinger North Shore Development Company and the Labrador Mining & Exploration Company.



INTERNATIONAL

elsewhere in Canada. There is sufficient coal in Nova Scotia, for instance, to last 100 years.

Electric Smelting a Possibility

"The possibilities of electric smelting should not be overlooked. We are now having research done on our ore with this in mind. Processes such as the Tysland-Holt and Wiberg are already in use, and although they require tremendous amounts of cheap electric power, coke consumption is greatly reduced in the process."

"The tremendous industrial development of the United States has been very greatly facilitated by the fact that the Mesabi iron deposits were reasonably accessible through the Great Lakes system, and as a result at the present time more than 80,000,-000 tons of ore are being transported yearly to the steel producing area adjacent to the coal fields in Pittsburgh and elsewhere. I think it can also be realized that the St. Lawrence area in Quebec, with an abundant supply of iron ore and hydro-electric power and access to the ports of the world, might develop into a great industrial area comparable with any in the United States."

U. S. a Potential Market

Mr. Durrell says Canada will have first call and that probably Europe will absorb some of the ore, but the real market should be the United States, and sales to the United States would be welcomed by the Canadian government as a means of acquiring American dollars. He believes that construction of the proposed St. Lawrence Seaway is essential to successful marketing in the United States in competition with the Mesabi; in fact, without the waterway there might even be difficulty in competing with American ores delivered to the Canadian steel companies at Hamilton, Ontario.

"Regardless of the future of the Mesabi," says Mr. Durrell, "I think we will all agree that in the event of another conflict Canadians and Americans would all feel much happier knowing that we had an abundant source of Canadian ore to draw upon rather than have to depend on some more distant and foreign sources, controlled by unstable governments, and the long, vulnerable ocean haul to our ports."

Iron Outgrowth of Base Metals

Mr. Durrell's interest in the possibilities of the Quebec-Labrador area was first aroused when he met Jules Timmins, president of the two companies with which he is now associated, and Noah Timmins, at Goose Bay in 1943, when they were en route to their base at Sandgirt Lake in the Labrador concession. At that time the search was for base and other strate-



Typical diamond drill set-up used for tonnage drilling only. The company has nine of these machines and they are mounted on skids to permit easy handling and moving from one set-up to the next. The landscape is typical of the district.

tic metals. The search was extended to iron ore later that year when reports began to appear indicating that the Mesabi ore was not inexhaustible.

Presence of iron ore in the Quebec-Labrador area was first considered likely more than 50 years ago when Dr. A. P. Low of the Dominion Geological Survey roughly outlined the Labrador trough. He found no ore, but noticed the presence of iron formation.

Discovery of ore did not come until 1929 when two well known Canadian geologists, Dr. W. F. James and Dr. J. E. Gill, now on the staff of McGill University, struck it at Ruth Lake in Labrador. There was no development of importance, however, until, in 1936 A. H. MacKay of Montreal organized Labrador Mining & Exploration Company and acquired a 20,000 square mile concession. Dr. Joe Retty was sent into the area in charge of exploration and he is still acting as chief geologist for the company. Much of the credit for discoveries that have been made should be credited to Dr. Retty and to his chief assistant, Dr. Moss, and to Jack Little, field manager.

Enter Hollinger Consolidated

In 1940 the MacKay interests suspended operations owing to financial difficulties, and in 1942 Hollinger Consolidated Gold Mines, headed by Jules Timmins and one of the biggest and most powerful mining corporations in Canada, acquired control and formed the companies that are today operating the concession. Because Hollinger has usually been identified with gold rather than iron, the M. A. Hanna Company of Cleveland became a minority partner of Hollinger in the whole venture.

Major field work started last year,

and this year drilling was intensified. At present twelve drills are operating four large, self-propelled churn drills and eight diamond drill rigs. About 200 men are employed. A landing strip was constructed at Knob Lake connected with the base camp by road, and the companies depend on air freighting for supplies.

Subsidiary companies have been formed for the freighting and for power site investigation. Another is the Quebec North Shore & Labrador Railway which will eventually be at least 350 miles long. The cost of railroad construction is expected to be about \$100,000,000.

Head of the companies, Jules R. Timmins, is a member of a famous family in Canadian mining. His father, the late L. H. Timmins, and his uncle, the late Noah H. Timmins, were pioneers of the Cobalt camp in Ontario and owners of the fabulous Larose mine. After selling their interest in that mine they pioneered in the Porcupine area and developed the well known Hollinger mine whose production has averaged more than \$80,000,000 in gold for the past half dozen or more years.

Mr. Durrell, general manager, has been prominent as an engineer for many years and during the war was in charge of construction of the Goose Bay airport and other Newfoundland-Labrador developments. John Knox, consulting engineer, is a former general manager of Hollinger Consolidated. J. A. Little, who heads the field staff, was former manager of Normal Mine, a base metal producer in northwestern Quebec.

Bucyrus-Erie 22-T churn drill employed for outlining tonnage principally. It also is used for test holes. The company had two of the 22-T's and two 27-T's in operation on the concession during the last season.



TAKES TOUGH GOING IN STRIDE ON SIMPLOT FERTILIZER JOB

Allis-Chalmers
HD-19

Bulldozing and ripping overburden and cap rock at the same time, an Allis-Chalmers HD-19 tractor handles this hard stripping work with ease on the phosphate mining operation of the Simplot Fertilizer Company of Pocatello, Idaho.

Equipped with hydraulic Torque Converter drive the HD-19 gets more work done, more easily, at less cost —

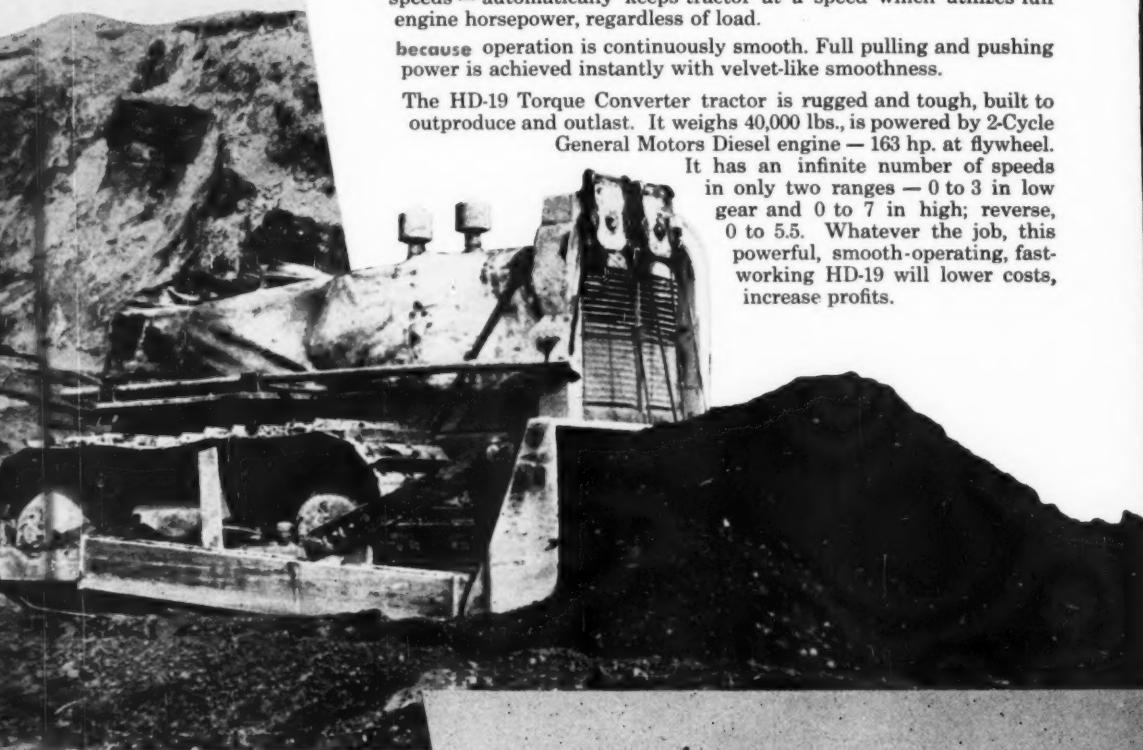
because engine power is automatically balanced against load; tractor puts in motion any load that can be moved.

because torque converter keeps tractor working at higher average speeds — automatically keeps tractor at a speed which utilizes full engine horsepower, regardless of load.

because operation is continuously smooth. Full pulling and pushing power is achieved instantly with velvet-like smoothness.

The HD-19 Torque Converter tractor is rugged and tough, built to outproduce and outlast. It weighs 40,000 lbs., is powered by 2-Cycle General Motors Diesel engine — 163 hp. at flywheel.

It has an infinite number of speeds in only two ranges — 0 to 3 in low gear and 0 to 7 in high; reverse, 0 to 5.5. Whatever the job, this powerful, smooth-operating, fast-working HD-19 will lower costs, increase profits.



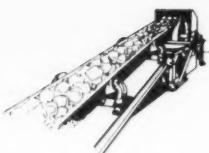
Allis-Chalmers HD-19 tractor, equipped with Gar Wood cable tipper and CU2 control unit, is bulldozing and ripping overburden and cap rock on the Simplot phosphate mining operations. Over a million tons of overburden at a depth of as much as 100 feet have been removed in the past three years.

Photos were taken in near zero weather at an altitude of 5700 feet. Tractor is shielded with a canvas cover to keep operator warm.



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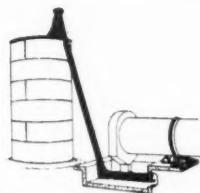
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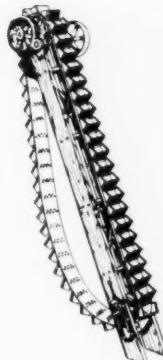
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FLOW SHEETS NEED A CHECK-UP, TOO!

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Today's strong metal markets and capacity operations coupled with progress in reagents and processes provide opportunities for higher recovery and better grade from the same or lower-grade feed. Many mills have made substantial progress by challenging time-honored ideas of reagent costs permissible to achieve higher grade, lower tails and more profitable operation.

Some have found that the newer reagents, known to be more efficient but hitherto considered too high-priced, are economical at today's metal and non-metallic prices. Others have found ways to introduce old established Cyanamid reagents into modified flow schemes to wring still greater returns from the ore. Still others have adopted pre-concentration by Heavy-Media Separation as the low-cost way to expand mill output quickly and at low capital-cost.

For example:

AMERICAN Cyanamid COMPANY



EXAMPLE 1 Tailings losses have been lowered and concentrate grade doubled at a large copper concentrator by using .08 lb. per ton of Reagent 404 with .03 lb. per ton of Reagent 301 as promoters, and by regrinding the rougher flotation concentrate. Concentrate grade has been raised from 14.25% to 30.66% and the tailing loss has been decreased from 0.252 to 0.185%.

EXAMPLE 2 Dilution with alabandite (MnS) caused difficulty in maintaining grade on a lead-zinc ore. Sodium cyanide and potassium permanganate were used to depress the sphalerite while the alabandite was floated with a mixture of pine oil and cresylic acid as a frother, thus raising the grade of zinc concentrate from 45% Zn to 52% Zn.

EXAMPLE 3 Merely by changing to Sodium Aerofloat® "B", a custom-mill treating lead-zinc ores raised the grade of zinc concentrate from 46% to 54% Zn.

EXAMPLE 4 Barite ores containing fluorite proved extremely difficult to treat because of the similar floatability of the two minerals. Cyanamid Mineral Dressing Laboratory found that selectivity could be achieved by using sodium silicate and barium chloride to depress fluorspar. Barite is floated with Reagent 825. By the use of this reagent combination, 90% of the barite is recovered in a 98.5% $BaSO_4$ concentrate containing 0.096 CaF_2 from an ore assaying 81% $BaSO_4$ and 7% CaF_2 . Tailing contained 45% CaF_2 .

EXAMPLE 5 A large flotation plant treating a manganese ore (rhodochrosite) found that substitution of Reagent 825 for one-half of the fatty acid soap, reduced total promoter consumption by one-third. The type of froth produced by the new promoter combination results in smoother and more uniform

plant operation. Lower tails are obtained with a decrease in reagent cost—a double dividend!

EXAMPLE 6 When the pyrite in the mill feed increased, a lead-zinc flotation plant in the Western U. S. began to have trouble with zinc concentrate grade. All of the well-known zinc promoters were tried. Finally Aerofloat® Flotation Reagent 226 was put on the mill. Only 0.06 pounds per ton in the form of a 10% solution added to the third conditioning, after the lime and copper sulfate, has produced acceptable grade.

EXAMPLE 7 Having trouble with lime scale in your solution lines? Experiencing lime deposition on the filter cloths in your cyanide plant? The Cyanamid Mineral Dressing Laboratory finds that complex phosphates, such as sodium tetraphosphate ($Na_4P_4O_{10}$) act as "sequestering agents" preventing lime deposition, thus greatly increasing the life of filter cloth. A surprisingly small amount is effective . . . as little as 10 pounds per day per 2,000 tons of solution . . . 0.005 pounds per ton!

EXAMPLE 8 In Heavy-Media Separation (Sink-Float) Processes, magnetic medium has been found superior to all others. Two large Heavy-Media plants which formerly used galena have now converted to ferrosilicon with better grade of concentrate and lower tails. A third plant will convert in 1949. Ferrosilicon is considerably cheaper than galena. It is also easier and cheaper to clean and keep clean, thus making it possible to operate at higher gravities when necessary. One plant treating barite ore operates at 3.75 specific gravity! Slimy ores present no problem. One Heavy-Media Separation operator writes "Chief virtue of ferrosilicon is in the ease of cleaning. Some of the muddy ore now being received at our mill would be extremely difficult to handle with galena as a medium."

*Aerofloat is a registered trademark of American Cyanamid Co. applied to certain flotation reagents of its manufacture.



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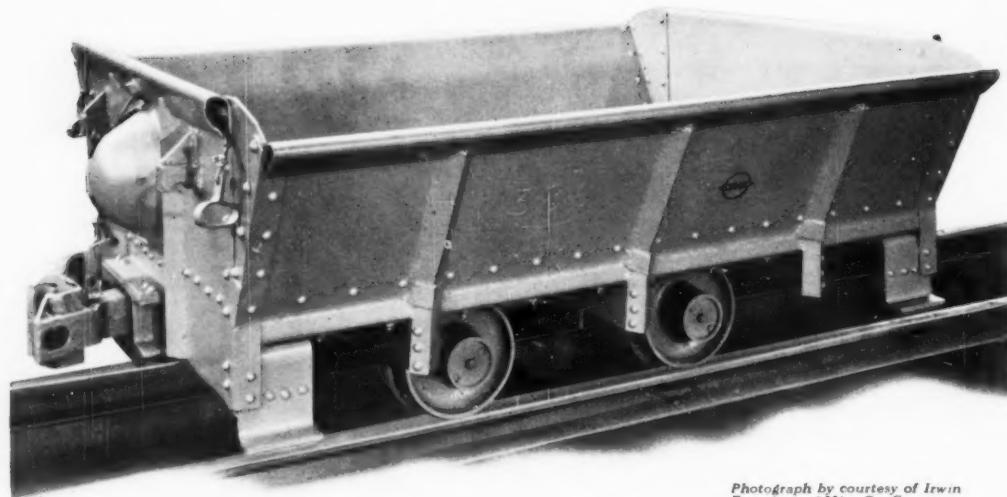
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372	1 1/4 cu. yds.	4161	5 cu. yds.	**7200 Walker	5-7 cu. yds.
*93-M	2 1/2-3 cu. yds.	151-M	6 cu. yds.	**7400 Walker	8-12 cu. yds.
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Oakite Products, Inc., photo.

Heavy milling equipment being subjected to a steam bath before painting. This is a common and fairly cheap method of removing grease and dirt from metal surfaces.

MODERN SURFACE PREPARATIONS PRESERVE MINING MACHINERY

The following article details ways of overcoming mill scale and rust by preparing metal surfaces. Described in some detail are a number of methods that can be used by nearly any mine ranging from weathering to sand blasting, the use of scrapers and wire brushes, hammering, and flame cleaning or burning. Touched upon also is a newer method applicable to most establishments — the pickling process.—Ed.

In these days of high costs of labor, materials, repairs, and replacement parts, it behooves mine operators to keep metal surfaces clean and painted because the cost of one repair bill will amount to many times over the cost of keeping a machine or other metal object properly coated.

Another fact not to be overlooked is that most of today's installations are built to last over a long term of years. Therefore, proper attention to painting can reduce upkeep considerably over the life of the operation.

Mill scale and rust are two conditions common to steel head frames, structural members, and machinery around mine and mill plants and a huge annual repair and replacement bill can be ruled out by giving thought to the item of painting and preparation of the surfaces that receive the paint.

What Is Scale and Rust?

Most of the structural steel used in industry is finished by a hot-rolling process. This involves heating at 1,300 to 1,400 degrees centigrade. As the steel cools, it oxidizes and a scale

By Rick Mansell
Los Angeles, California

is formed. This mill-scale is a greyish oxide of iron whose chemical formula is Fe_3O_4 , and has magnetic properties as compared with rust, a brownish-red oxide, whose chemical formula is Fe_2O_3 . On freshly fabricated steel members, the mill-scale formed is bright and almost silvery, but this, on exposure, acquires a bluish-grey color.

If the mill-scale were able to form a continuous film with good adhesion to the base metal, then it would serve as a good surface for receiving paint coatings, and would be a good preventive against corrosion. However, it is brittle and flakes away from the surface of the steel, partly as a result of electrochemical action. Practically all the iron and steel used for structural purposes possesses a layer of this scale on its surface. The presence of mill-scale is detrimental to the life of paint coatings applied over it, and for this reason most specifications insist that it be removed by one of the approved methods.

For small and medium-sized members, the steel is immersed in acid solutions to remove the scale effectively without attacking the metal itself to any considerable extent. This attack is reduced to the minimum by the addition of certain chemical restraints to the acid bath. These restraints are known as inhibitors. The most common acid solutions used are those containing sulphuric and hydrochloric compounds. This process is usually followed by a neutralizing wash in order to nullify

the dangerous effects of any acids that may be left on the surface of the metal. A coat of temporary rust preventive is then applied to the steel in order to protect it during transport and storage.

Mechanical Removal

There are various mechanical means of scale removal. Examples are sand-blasting and shot-blasting; the use of scrapers and wire brushes; and the hammering process. Quite recently a flame cleaning process has been developed. In this process, a number of gas flames are slowly moved over the entire steel surface. The difference in the heat expansion between the mill-scale and its steel base causes the scale to detach itself quickly from the surface.

Preparation by Weathering

Some years ago it was a fairly common practice to resort to the process of weathering in order to induce sufficient rusting to loosen the mill-scale. This has been found to be poor practice because the weathering process does not remove the mill-scale completely. Again, a substantial amount of rust is always left behind on such a surface despite the most careful attention to its removal. Now, although the rust may not be as harmful as the mill-scale, yet, for obvious reasons, it is still objectionable. Furthermore, the removal of the scale by weathering has the disadvantage of producing a surface that is rusted and pitted. There are many other methods of descaling that are able to produce a much smoother surface, resulting in a paint job of a superior appearance.

INTERNATIONAL

Surface Preparation, Mechanical

As a general rule, cleaning with scrapers and wire brushes is satisfactory for cast iron because it has a rough surface and is free from mill-scale. Cast iron is much easier to prepare for painting than steel, because steel surfaces possess a tightly adhering mill-scale that is not easily removed by wire-brushing. It is not uncommon to see the paint in excellent condition on the cast iron portions of exterior metal structures, while that on the steel sections may have suffered considerable deterioration. Cast iron seems to provide better adhesion to the paint coating than does steel.

Home-made scrapers can be made from a couple of old flat files, from 10 to 14 inches in length. One file can be turned over, about 1½ inches from its end, and then a chisel edge ground onto it. The other file has a beveled edge ground onto its end. Both the steel files are then tempered to hard edges which will possess very good cutting properties. A wooden handle about a foot long is made for each file; in this way, it will be possible for the operator to grip the scraper with both hands.

Both a hammer and a cold chisel are needed for areas covered with heavy mill-scale or for large rusted sections and deeply corroded places. After the mill-scale is chipped off, the steel scrapers are used and then these are followed by a wire-brush operation. Large areas that are deeply rusted are treated with a blow-torch burner. The dry rust is then removed by means of a steel-wire brush.

A most effective tool for removing rust and dirt from metal surfaces is a revolving wire brush. This can be made by fitting a steel wire brush to the revolving shaft of an air motor, whenever compressed-air equipment is available. Whenever electrical power is available, then the shaft of a small portable electric motor can be used. Another type of machine has its electric motor mounted on a small truck fitted with wheels. A revolving brush is secured to the end of a long flexible wire cable contained in a hose housing, similar to the dentist's drill.

Pneumatic Scaling

The pneumatic rust-scaling hammer is practically the same as the pneumatic riveting hammer, but it is lighter and is fitted with a chiselled edge tool. Compressed air is required for operating this instrument; it is worked very simply by pulling or pushing a trigger and holding the chisel point onto those rust sections and mill-scales that have to be removed. The compressed air drives the chisel forward with repeated

short, sharp blows during the period when the thumb or the finger pulls the trigger down.

The air hammer is able to descale three or four times as much surface per day as can be treated by hand, using a chisel and hammer. It works well on horizontal surfaces such as plates, decks, bridge ties and beams. However, on vertical surfaces the weight of the pneumatic hammer retards its effectiveness to a certain extent.

Sand-Blasting

The best method of preparing newly fabricated steel surfaces covered with mill-scale is the sand-blasting process. This removes all the grease, dirt, rust, and mill-scale in one operation and leaves the surface perfectly dry and in an ideal condition to receive paint. The process of blasting tends to induce a certain amount of surface hardening.

The sand abrasive has in some cases been replaced by steel grit and steel shot. In this connection it is necessary to indicate that coarse shot particles may, under certain circumstances, merely bridge the openings of the pits, and then hammer the rust into the surface instead of removing it. The enclosed rust will tend to stimulate further corrosion. The abrasive is applied by means of air at a pressure between 25 and 100 lbs. p.s.i. The blast is directed onto the metal surface until the scale is completely removed. In the case of a blasting machine of the automatic conveyor type, the nozzles are so arranged as to provide a uniform blasting of the surfaces to be cleaned. Sand-blast machines are made in several sizes to suit the job.

Air pressure is built up in a storage tank by means of an air compressor

driven by a gasoline engine or by electric power. The sand is mixed with air at about 60 lbs. pressure and is then driven through a nozzle at the end of a rubber hose. The sand-blasting machine can be placed in any handy location.

The disadvantages of sand-blasting are its high initial cost and the danger of silicosis. There is also the problem of collecting the used sand so that it will not cause trouble in other operations.

Sand-blasting leaves a bright, shiny metal surface that, when subsequently painted, remains free from rust for a much longer period than those surfaces cleaned by other methods. It is recommended that a fine grade of sand such as sand-blasters' No. 1 type be used. The coarser No. 3 grade will produce rougher surfaces and will, consequently, require a larger amount of paint for coverage. In addition, corrosion will tend to develop much sooner on rough surfaces because its high points will become subject to early attack on exposure.

Flame-Cleaning

Recently, several construction projects have employed a flame-cleaning method for the removal of rust, mill-scale, and moisture from structural steel prior to painting. This method, with modifications, is applicable to smaller operations. It has been established that it necessitates a careful control of the flame, as well as of other factors in order to secure the best results. A specification has, therefore, been adopted to control the sequence of operations.

The first requirement is that all oil, grease and similar adherent materials be removed by a suitable solvent. The excess solvent is removed from

(Continued on Page 57)

A small still tank for alkaline cleaning that is used to clean sheet metal before painting. Plants of this size are within reach of nearly every operator and soon pay for themselves.

Oakite Products, Inc., photo.



[World Mining Section—23]

PROMINENT MEN IN INTERNATIONAL MINING

Dr. A. D. Bain, formerly of Nigeria, Africa, has been appointed assistant chief geologist to the State Department of Mines, Victoria, Australia.

Professor E. de C. Clarke has retired from the geology department at the University of Western Australia. A New Zealander, Clarke had been with the department since 1930.

C. T. Crawford, formerly of Broken Hill Associated Smelters, Port Pirie, is now designing a pilot plant to be set up on Stradbroke Island, Queensland, Australia, by Titanium and Zirconium Industries Pty. Ltd.

Eric A. Rudd, Broken Hill Pty. Ltd. geologist, has accepted an offer from Adelaide University, South Australia, to become its first professor of economic and mining geology. Rudd is an Adelaide graduate, taking his postgraduate work at Harvard.

A. J. Reid has resigned from the board of directors of Renison Bell Tin Mines, Ltd., Tasmania, because of ill health.

W. S. Robinson has relinquished his position as overseas advisor to the Electrolytic Zinc Company of Australia. He had been associated with the company since its inception 30 years ago.

John Smeddle, formerly situated at Gabriola Island via Nanaimo, British Columbia, is now general superintendent for Empresa Minera Volcan and may be addressed at Carrera 19-#2819 Bucaramanga, Colombia, South America.

Lucien Eatow and **Fred G. Koper** of Pierce Management, Scranton, Pennsylvania, are now engaged in consulting work for the Turkish government agency, EtiBank. They recently completed a report on the Bolkardag lead-zinc property which is scheduled for production in the near future.

Ferit Kromer, a graduate of Columbia University and formerly a mining engineer at the Zonguldak coal mines in Turkey, is now superintendent in charge of operations at the chromite mines of Tastepe in the Eskisehir district of Turkey. During the past year he has developed several new and some abandoned chromite mines in this area.

John E. Johnson has resigned his position with Empresa Fosfatos de Chile to join the engineering staff of the Bethlehem Chile Iron Mines at the Tofo mine, Serena.

Solomon Lieb, general superintendent of the Bolivian Tin & Tung-

sten Mines Corporation, is now in the United States and may be reached at 21 Sherman Avenue, New York 34, New York.

Whitney P. Mee, consulting metallurgist for Cia. Metalurgica Penoles, S. A., is now spending most of his time at the firm's lead and copper smelter at Torreon, Coahuila, Mexico, where he may be addressed at Apartado 93.

R. C. Sherman, western representative of the E. I. du Pont de Nemours & Company, recently returned to Butte, Montana, following a business trip to South America.

Gordon Cargal of the Jeffrey Manufacturing Company, who had been spending several months in Salt Lake City following his return from South Africa, is now in Australia. He may be reached there c/o Gibson-Battle Pty. Ltd., 1595 B.B.F.P.O., Sydney.

Theodore Koulozmine has been engaged by the Metalore Mining Corporation of Toronto, Ontario, to supervise a diamond drilling program for the organization.

K. F. Wadsworth, vice president and general manager of the Maple Leaf Milling Company, Ltd., Toronto, Ontario, recently announced the appointments of **H. V. Hawkins** as gen-

eral sales manager, and **C. A. Fraser** as assistant general sales manager of the company.

Paul A. Bundy, mining engineer and geologist of Nevada City, California, is now located on the Isle of Pines, Cuba, where he is carrying out extensive examination and exploration work for Cuban and Canadian mining interests.

C. B. Anderson of London has been appointed a director of the Union Corporation, Ltd., operating in the Witwatersrand district, Transvaal, South Africa.

Serge M. Glyachenkoff, formerly with the California Department of Highways, is now foreman of the Balatoc mine of Benguet Consolidated Mining Company at Baguio, Philippine Islands.

Dr. William D. Johnston, Jr., director for the Foreign Geology of the U. S. Geological Survey, now in Brazil as a member of the Aribbi Mission, recently took part in the II Geological Meeting held in Sao Paulo.

Eugene Stevens, assistant superintendent for the Losaria Mining Company in Honduras, Central America, is retiring from his position after 36 years with the company. He will make his home in Bisbee, Arizona.

Frederick Laist, vice president in charge of metallurgical operations of the Anaconda Copper Mining Company in Montana and Idaho, has been transferred to the company's New York headquarters.

W. Mure of London has joined the board of Kampong Kamunting Tin

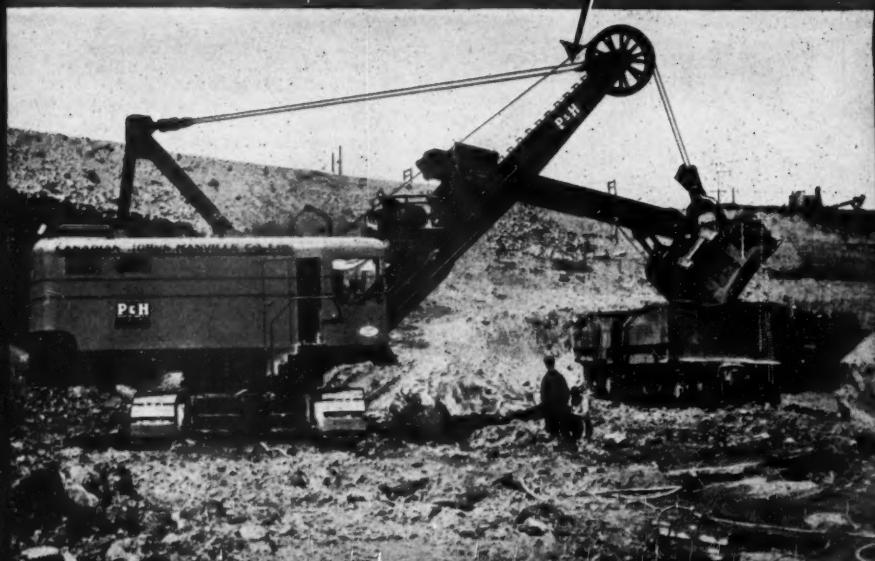
(Continued on Page 52)



ESSENTIAL METALS REPRESENTED IN MOBILIZATION PLANNING

The National Security Resources Board is currently engaged in consulting small informal groups representing scores of industries for the purpose of determining the best methods of mobilizing themselves in the event of a national emergency. The group shown above, representing the zinc-cadmium industry, recently met in Washington, D. C., under the supervision of John J. Croston, director of NSRB's non-ferrous metals division. Their recommendations will be reviewed later by formal industry advisory committees before final approval by the board for transmission to the President. Left to right are: K. G. Konderberg, Graham Crowley Associates, Jenkintown, Pa.; Whitman Hopton, Matthiessen and Hegeler Zinc Co., LaSalle, Ill.; Anthony Siragusa, U. S. Steel Corp., Pittsburgh, Pa., and Fred M. Carlson, American Tinning & Galvanizing Co., Erie, Pa.

From EAST to WEST



A P&H Model 1600 (6 cu. yds.) owned by Canadian Johns-Manville Ltd., located at Asbestos, Quebec, Canada.



A P&H Model 1400 Electric Shovel owned by the Johns-Manville Corp. at Lompoc, California.

Dozens of users of P&H Electric Shovels have found the P&H Magnetorque Drive an outstanding advantage. It transmits power for hoisting by electro-magnetic forces rather than by mechanical contact. It results in steadier, faster production—fewer interruptions. And it cuts maintenance costs to the bone. Many users state that they would select P&H Electric Shovels on the strength of this feature alone. Yet Magnetorque is only one of many sound reasons why experienced users re-order P&H Electric Shovels.

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Capital No. 4, operating near Folsom, Calif., equipped with Yuba Mud Pumping System to remove mud and fine tailings which slide or settle into the pond and which otherwise would prevent dredging.

Don't guess and gamble on your dredge problems. Consult Yuba and get the benefit of 40 years continuous experience in bucket ladder dredge design and operation . . . all sizes from the smallest buckets to the largest . . . for digging all dredgeable materials for gold, tin, platinum or other mineral products—depths from 10 feet or less to 150 feet or more.

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Combine your knowledge of your property with Yuba's specialized engineering ability, and you'll get a dredge that will consistently deliver maximum

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(Continued from Page 50)

Dredging, Ltd., with operations at Kamunting in the State of Perak, Malaya.

Dr. Philip Guild of the U. S. Geological Survey, who has spent two years in studying the manganese deposits of Minas Gerais in Brazil, recently took part in the II Geological Meeting, sponsored by the Brazilian Society of Geology at Sao Paulo.

J. E. Denyer has joined the staff of Gold Coast Banket Areas, operating mining concessions on the Tarkwa Banket Range of the Gold Coast Colony of West Africa.

Professor Othon Henry Leonidas, member of the National Council for Mining and Metallurgy in Brazil, also of the United States-Brazil Commission, is now in the United States, where he is studying halite mine operations for the alkali industry in Brazil.

Alan M. Nordale has been promoted from assistant resident manager to resident manager of The Yukon Consolidated Gold Corporation, Ltd., operating in the Klondyke district of the Yukon.

Graham Whidden, formerly of the Ontario Government Bureau of Statistics, has joined the staff of the Canadian Metal Mining Association.

Cameron W. MacDonald, formerly manager of the Berens River mine which suspended operations, was recently appointed general superintendent at Quemont Mining Corporation, Noranda, Quebec.

C. M. Campbell, until recently superintendent at Siscoe Gold Mines, Ltd., in northwestern Quebec, has been placed in charge of operations at Silver Giant Mines, Ltd., Spillimacheen, British Columbia.

Obituaries

South Africa lost three of its most prominent citizens in the month of December, all of whom had considerable mining interests. Dr. H. J. Van Der Bijl, 61, chairman of the South African Iron and Steel Industrial Corporation, the African Metals Corporation and many others, died in Johannesburg. Guy Carleton Jones, 60, board member of New Consolidated Gold Fields and 25 other South African mining companies, died in Cape Town. His almost single-handed researches led to the discovery of the huge and important Western Witwatersrand gold fields and the development of mines, such as, Venterpost, Libanon, Blyvoor and the formation of the West Wit areas. Rt. Hon. J. H. Hofmeyr, 54, was Field Marshal Smut's heir apparent to the premiership and had long been regarded as one of the more liberal and able of South African politicians. He was well known for his efforts to improve the conditions of the native mine workers.

INTERNATIONAL



AFRICA

NORTHERN RHODESIA — Plans are reported to be going ahead for the erection of an electrolytic copper refinery by the *Mufulira Copper Mines* at Mufulira. The projected plant is to have an initial capacity of 36,000 long tons and will cost around £1,500,000. Despite the usual difficulty of coal supply which is endemic in Rhodesian copper mines, production is expanding, spurred on by the U.S. demand and the British need for American dollars.

ALGERIA — *La Societe de L'Ou-enza*, principal producer of iron ore in North Africa, is actively continuing rehabilitation of its loading establishments, destroyed in 1942 by German bombardments of the port of Bone. The first phase of the work was terminated at the end of 1948, and completion of the entire program is expected this year. Meanwhile, the company is undertaking a program of mechanization and re-equipment of its properties at Bou Kadra and Quenza which will result in a substantial increase in production and a decrease in operational costs.

SOUTHERN RHODESIA — Following the recent sharp criticism by the International Monetary Fund authorities of the Southern Rhodesian government's subsidization of gold production, has come the announcement that the colony has undertaken to submit to the Fund a new scheme for assisting the mines without directly increasing the gold price. No details of the scheme have as yet been made public, but the announcement indicated that only the necessity for prior legislative authority was holding up the launching.

SOUTHWEST AFRICA — *Tsumeb Corporation*, operating what was a partially developed and abandoned property, has now unwatered the mine to the 20th or bottom level. During the past year, mining was carried on in the upper levels, producing 19,265 tons of ore, while the new selective flotation concentrator, in four months of operation, treated 45,874 tons of ore from surface dumps. This tonnage produced 13,897 tons of copper-lead concentrates, running 41.94 percent lead, 10.62 percent copper and 6.73 oz. silver per ton, as well as 5,187 tons of zinc concentrates. The copper-lead concentrates and direct shipping ore are smelted at El Paso, Texas, and at Hoboken, Belgium. M. D. Banghart is general manager of Tsumeb and also of the O'okiep Copper Company.

SOUTH AFRICA — At the Venterspost gold mine, probably the Rand's wettest mine, work has been started on a canal to restrict the creek whose floodwaters spread over the area causing the serious water condition. The magnitude of the water problem is shown by the fact that in a 12-month period, during which 1,600,000 tons of rock were hoisted, 15,100,000 tons of water were pumped to the surface, or almost 9½ tons of water to each ton of water. Venterspost's manager is R. R. M. Cousens.

MADAGASCAR — Francois Lasnier of Tananarive is seeking to enlist American financial backing for the development of graphite mining concessions covering about 30,000 acres, 70 miles north of Tananarive. Although no thorough examination of the properties has been made, Lasnier reports that up to 1943, with rudimentary equipment, he obtained about 5,000 metric tons having a carbon content of 85 to 92 percent.

EAST AFRICA — Gold mining in this region, which has not yet been very successful, was given a fillip recently by the announcement of *Tanganyika Central Gold Mines* that a borehole had obtained a gold intersection at a vertical depth of 800'. Assays showed 15 dwts. over a true width of 99.6" or 1,491 dwts. A second deflection at almost the same depth obtained 16.9 dwts. over 85.5" or 1,445 dwts.

NORTHERN TRANSVAAL — Prevailing favorable conditions for tin producers are reflected in a progress report by Charles G. Blight, man-

ager of *Rooberg Minerals Development Company*. In spite of limitations imposed by power and equipment shortages, 7,556' of development was carried out last year, an increase of 1,823' over 1947. Of this total, 2,442' was payable, averaging 1.44 percent metallic tin over 30". Ore reserves were estimated at 36,180 tons. Total rock mined and hauled was 51,423 short tons, and concentrates recovered amounted to 500 long tons, equal to 325.03 long tons of metallic tin.

SOUTHWEST AFRICA — Highlighting the *O'okiep Copper Company*'s year were the discovery of the Wheal Julia orebody of approximately 1,000,000 tons of five percent ore and a record production of 21,359 short tons of blister. Of a total of 973,200 tons milled during the year, the Nababeep mill treated 606,000, averaging 2.52 percent copper (0.33 percent oxide) to produce 32,710 tons of concentrates running 20.61 percent copper. Underground, experimental work with tungsten carbide bits in the company's three mines, the Nababeep and East and West O'okiep, has given satisfactory results. Blast hole diamond drilling is being replaced by carbide drilling for holes under 40' long.

SOUTHERN RHODESIA — One of the effects of the gold subsidy (amounting to about 16 percent of the standard price) is seen in an increase of 54,000 tons in the ore reserve of one of the country's leading gold producers, *Wanderer Consolidated*. Latest available estimates of



FAR EAST RAND MILLING PLANT

On the Far East Rand, many gold reduction plants are now in operation, one of the larger mills of the district being that of Van Dyk Consolidated Mines, Ltd., part of whose layout is shown in the above photograph. Pictured are a number of the agitators and thickeners in operation at the plant, with the mill and sorting house in the background. Tonnage milled in an average year is 1,200,000 tons, which is reduced in a battery of 12 tube mills.

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this reserve place it at 293,000 tons, averaging 2.0 dwt. per ton. This increase is ascribed partly to favorable development results in the ore shoot system of the Wanderer section, and partly to the gold subsidy. Exploratory work to determine extensions of the known shoots, both laterally and at depth, has proved an appreciable tonnage in the upper horizons, extending to the 18th level. R. B. Smart is consulting engineer.

TUNISIA—The Tunisian Government, together with the *Societe des Mines de Potasse d'Alsace*, has formed a new company to be called the *Societe d'Etudes de Zarzis*. The new firm will have for its purpose the exploitation of potash salts in the south of Tunisia.

FRENCH MOROCCO—The *Cie. Marocaine Minière et Métallurgique* is continuing exploitation of its manganese deposits in the Imini region, south of the Haut-Atlas. The mineral is transported by trucks from the mine at Marrakech over the Haut-Atlas through a pass more than 2,300 meters in altitude. At Sidi-Marouf, the ore is pulverized and agglomerated into sinter form. Future plans include the possibility of piping fuel from the Sidi-Marouf works.

FRENCH GUINEA—An engineering group dispatched by *Cie. Minière de Conakry* arrived recently to examine an important iron ore deposit near the island of Kaloum, with a view toward possible production activities.

EAST AFRICA—A new gold discovery has been reported at Kibgori, near Kisumu, said to be 25 miles from the Rosterman gold mine. The Kenya Mines Department said the deposits in the primary fold are promising. The formation covers at least five miles with veins extending over a 1,200' long strike, bearing considerable amounts of visible gold.

SOUTHERN RHODESIA—Authorities are showing great interest in the possibilities of large-scale platinum deposits in the Bulawayo area. In a month period, 43 claims have been staked, more than any other mining activity in that region.



RUSSIA—According to an announcement by Stalin in the Gorny Mining Journal (published in Moscow), present pig iron production of 18,000,000 tons annually from deposits on the Kerch Peninsula at the Black Sea should be increased to 50,000,000 tons by 1960. Steel production, it was said, should be as high as 60,000,000 tons, while present iron ore production of 28,500,000 tons yearly should be increased to 100,000,000

tons. To create this huge expansion, it is planned to open iron ore deposits at Kimkaza, Kamijurinsk, Ortelska, Katerlecka and Saliska, all on the Kerch Peninsula. The deposits of Kursk and Krivoi-Rog will also be intensively developed. The Kerch ore is said to contain: 36 percent Fe, 1.5 percent Mn., 0.9 percent P, 1.8 percent SiO₂, 0.12 percent As, 0.4 percent S, 4.5 percent Al₂O₃ and 2.8 percent CaO and MgO.

TURKEY—With the current high prices of lead and zinc, it is hoped that the *Bolkardag* mine, owned by the government agency Eitbank, will soon be placed in operation. Situated on the Taurus Mountains in the province of Nigde, 257 kms. from the Mediterranean port of Iskenderun, the mine has a known ore reserve of 250,000 tons. The ore contains six percent lead, five percent zinc and considerable values in gold and silver. A suitable process of concentration, which will include cyanidation, is now being tested. Concentrates will be treated at a smelter to be built at Iskenderun.

INDIA—About 47 percent, or 4,837 long tons of kyanite ore exported from Calcutta during the first eight months of 1948 was shipped to the United States. This tonnage compares with nearly 38 percent, or 6,088 tons shipped during 1947. A similar tonnage was shipped to the United Kingdom during this period, while 501 tons went to Sweden, 38 to France and 10 to the Netherlands.

TURKEY—A flotation plant, power plant and repair shops have been completed at the *Keban* lead mine which is expected to start operations soon in the province of Elazig, 548 kms. from the port of Iskenderun. The mine, which has an expected life of five years, has a proven reserve of 100,000 tons of ore with a sulphide lead content of 10 percent. The concentrator will handle 18,000 tons of mine-run ore annually; concentrates will be treated at a smelter to be erected at Iskenderun. Next work to be undertaken at the mine will be installation of an aerial tramway between the mine and the flotation plant.

BURMA—Larger output and higher prices for tin and tungsten have enabled operators to work with some profit in spite of heavy increases in costs. At a recent meeting of *Consolidated Tin Mines of Burma, Ltd.*, it was divulged that production for their properties had gone up more than 50 percent during the last year.

INDIA—The Indian government has instituted a plan for setting up an aluminum industry in the province of Nagpur. Recently the Director General of Industry and Supply of India visited the Province to confer with the Central Provinces Government about the plan.

MALAYA—Dredging was resumed in December by *Tronoh Mines, Ltd.*,

INTERNATIONAL

at its Harrietville dredge which had been out of commission since mid-November when lightning struck the main transformer that carried power to the boat.

TURKEY—Financial backing from the E. C. A. is being sought by Ferit Kromer who is conducting exploration work for chromite in the Eskisehir district. Kromer estimates that with financial aid, the annual output from the promising chromite occurrences in this district can be boosted to 35,000 tons in 1949.

MALAYA—The Siamese Tin Syndicate, Ltd., announces that it expects to begin dredging in a newly acquired area near Kota Bahru before the end of 1949.



EUROPE

AUSTRIA—Increased output is reported from the lead-zinc mines of Bleiberg, Carinthia, due to a recent discovery of an orebody with values of 4.8 percent lead, 4.5 percent zinc and some molybdenum. Production figures for the first seven months of 1948 exceeded the total 1947 output of 48,500 tons of dressed ore, and it was expected that 1948 production would reach pre-war levels. As Austria does not have a zinc smelter, the concentrates are shipped to Belgian smelters.

POLAND—With plans to increase iron ore production by 20 percent in 1949, large-scale exploration campaigns are proceeding in the Kielce-Radom area. The examinations will determine the extent of the low-grade deposit, said to contain ores of 25 to 30 percent iron. Poland also will import considerable amount of iron ore from Sweden and U. S. S. R.

CZECHOSLOVAKIA—The old copper mines in the Krompach area of Slovakia are being reopened, and retimbering and other safety measures are now being carried out. The chalcopyrite ore from these deposits is said to be among the best available in the country.

HUNGARY—The only bauxite mine in Hungary not being nationalized, the Swiss-owned mine of Halimba, is now producing 3,000 tons of high-grade ore monthly for Hungarian alumina plants. Operating the property is the Swiss firm, Aluminum Industry Company, Ltd., which has large aluminum plants in Neuhausen. As exportation of the Halimba bauxite is now allowed, the Swiss firm is purchasing French ore for its own plants.

YUGOSLAVIA—A new 65 h.p. hoist has been installed at the lead-zinc mine of Kopavnik, Serbia, for use in the newly completed 685' shaft.

ROMANIA—The 100-ton cyanide plant of the Petrosani Gold Mines of Baia-Mare, Transsylvania, is to be increased to a 300-ton daily capacity. As soon as the necessary additional installations have been completed, it is expected that current production of 11,000 fine oz. monthly will be increased to 25,000 fine oz. The quartz-

ite veins of the Petrosani mines contain an average of 0.7 oz. gold per ton.

BULGARIA—The Cabinet has declared that data, such as actual production figures of industry, mining and agriculture are henceforth to be considered State secrets. Also included in the not-to-be-disclosed information are reports of the Bulgarian National Bank and balances of the State companies. Any de-



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INTERNATIONAL

parture from this ruling will result in severe punishment.

GERMANY—A new firm, *Hektor Corporation*, has been formed in Essen with the purpose of producing iron and lead ores, smelting of non-ferrous ores and the distribution of these products.

FRANCE—What is called the most important uranium deposit in France has been discovered in Entraygues near Rodez in the Aveyron department of southern France. Reports are that the deposit contains ore of three kgs. uranium per ton. Development will proceed immediately.

HUNGARY—Latest available production figures show that Hungarian bauxite output for the first eight months of 1948 amounted to 276,748 metric tons, or 40 percent of production capacity. Export and reparation shipments for the same period amounted to 275,748 tons.

YUGOSLAVIA—A \$10 million trade agreement between Yugoslavia and Austria was recently signed in Belgrade, whereby Yugoslav copper, lead and iron ores will be exchanged for Austrian manufactured goods.

ROMANIA—According to a statement by the State Gold-Silver Center, gold production has exceeded the target by 17.8 percent. Production figures were not available.

BULGARIA—The *Pyrin and Rodopski Metal Companies*, operating in the vicinity of Zlatograd and Smoliansk, report the possibilities of increased production. At present, the firms are producing about 15,000 tons

of dressed ore annually. The ore carries values of 12 to 15 per cent zinc with some lead.

LUXEMBOURG—It is reported likely that for the next few months, Luxembourg will be filling orders for steel at the rate of 50,000 tons monthly. Europe's largest steel exporter has for its main customer the United States. Western Europe, which is desperately short of steel, generally cannot afford to buy Belgian or Luxembourg steel, payable in scarce Belgian francs. Outside of trade agreements, the only other active buyers are the Soviet Union and Argentina.

YUGOSLAVIA—A hydroelectric power station, the second largest in the country, has been placed in operation at Maribor, Marburg, as part of the five-year industrialization plan. Construction is under way of a large industrial center in this area which will feature smelters and huge alumina plants.

GERMANY—At Frankfurt, the Joint Export-Import Agency has signed contracts for the import into the Bizonne of 9,500 tons of pure aluminum. Of this tonnage, Switzerland will supply 4,500 tons and Italy 5,000 tons.

AUSTRIA—The Austrian Government has placed orders with the United States amounting to \$270 thousand for drilling equipment which will be used to resume prospecting work suspended in the last years of the war. Intensive explora-

tion is scheduled to meet the ever-increasing demand for minerals.

CZECHOSLOVAKIA—Latest production figures available show that for the first 10 months of 1948, 1,192,-865 tons of iron ore were produced, with an October output of 133,282 tons.

POLAND—Iron ore and refractory materials are being furnished Poland's iron and steel industry by the state-owned Iron Ore and Refractory Mines Association which controls all iron ore mines, as well as numerous quartzite, dolomite, magnesite, limestone properties and lime kilns.

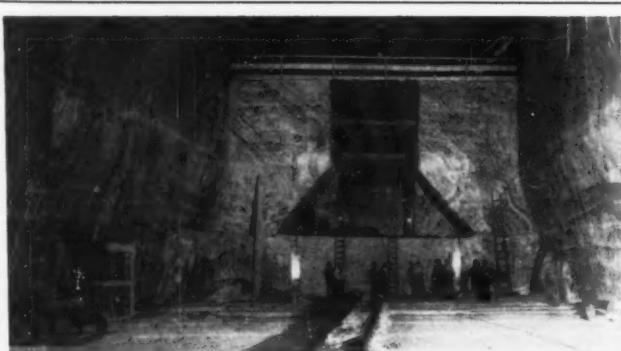
GERMANY—The Borchers Brothers AG in Goslar-Harz, working at limited capacity since the end of the war, are again producing alloys of tungsten, cobalt, molybdenum, and nickel. If sufficient supplies of arsenic were available, the manufacture of plant disinfectants could be increased considerably by the same firm.

ENGLAND—The Cornish tin mining industry is eagerly awaiting the Government report on the future prospects of tin mining in Britain's oldest industry (the earliest recorded deals took place between the Phoenicians and Britons around 100 B.C.). The venture needs Government support which is expected to come through some sort of official board that is able to bear the heavy original capital expenditure involved. Unsettled conditions in Malaya have given urgency to the project, and it is reported the Government plans to obtain as much as 35 percent of Britain's tin requirements when the scheme gets under way. At present, only the South Crofty, Pendeen and St. Just mines are operating profitably.

SPAIN—To stimulate production of lead, which is lagging, a raise in price was contemplated, effective January 1, 1949. The reported increase will be to 6,296 pesetas per ton, an increase of 1,397 pesetas, or 28.50 percent above the previous level. Even this price will not remedy the Spanish lead situation, but production will be stepped up following the increase.



LATIN AMERICA



AKNASLATINA ROCK SALT MINE

Although hampered noticeably by five changes of regime in the years between 1919 and 1946, Czechoslovakia's rock salt mines of Aknaslatina are now supplying the country with 750 short tons daily. Although the production is used by Czechoslovakia, the mines have been controlled by the U.S.S.R. since 1946, in accordance with a Moscow treaty. Czechoslovakia's only rock salt mines, they were controlled alternately by Czechoslovakia and Hungary before being taken over by Russia. Mining is carried out in large rooms 60' wide, 85' high and over 300' long, as seen in the Lewis mine above.

CHILE—An additional \$20 million loan has been extended by the Export-Import Bank, Washington, D. C., to defray increases in the cost of U. S. equipment, materials and services needed to complete a steel mill now under construction at Concepcion. The credit is authorized to the

(Continued on Page 59)

INTERNATIONAL

MACHINERY PRESERVATION

(Continued from Page 49)

the work before proceeding with subsequent operations. The surface is then freed from its occluded moisture and from its superimposed rust and scale by the passage of the oxy-acetylene flames.

The flames burn equal parts of oxygen and acetylene. The inner cones of the flames have a ratio of length to port diameter of at least 8 to 1, and usually are not more than 0.15" from center to center. The flames produce an intense heat.

It is required that the oxyacetylene flames be moved over the surface of the steel at a speed sufficiently fast to remove all the rust and scale, but not too slowly because the danger exists that, owing to the high temperature, a fusion of the metal, loose scale, and other foreign matter may take place.

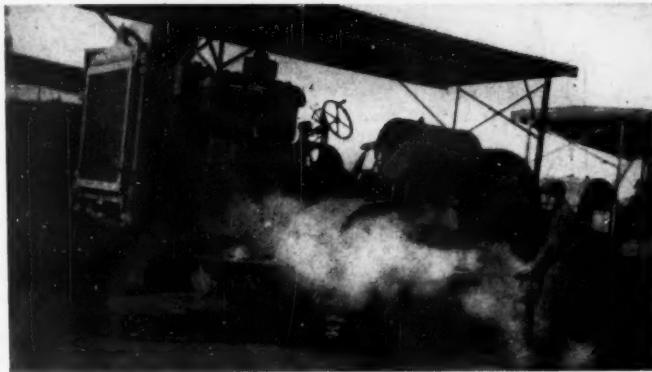
At the end of the flame-cleaning operation the surfaces of the steel are promptly wire-brushed and hand-scraped, then swept and dusted to remove all free and loose material. It is required that compressed air be not used for this purpose. Paint is applied while the temperature of the steel is higher than that of the surrounding atmosphere; in this way, there will be no recondensation of moisture on the surface.

Pickling Methods of Preparation

Some pickling solutions utilize the action of an 18 percent solution of sulphuric acid in which the metal is immersed. The next stage is the complete removal of all the free acids and soluble iron salts from the surface. This is usually effected by immersion in hot water tanks, although hosing with cold water is also very efficacious. In some plants the steel work is immersed in a hot solution of lime water to neutralize the last traces of acid.

Another popular process employs a solution of 5 percent sulphuric acid at 160 degrees F. This is followed by a rinse in hot water and then an immersion in a 2 percent solution of phosphoric acid containing a small percentage of iron phosphate. The solution is kept at 185 degrees F., and the immersion time is usually about 4 minutes. It is removed from the bath and allowed to dry without washing and the resultant film superimposed on the metal surface is a rust inhibitor. A shop coat of primer is applied to the metal while it is still warm.

The composition of pickling baths is fairly flexible and is arranged to suit the individual conditions. It is necessary that all acid baths contain inhibitors. These are compounds which are employed to decrease the



Oakite Products, Inc., photo.

Heavy machinery undergoing steam cleaning prior to painting. The operator in this picture is applying steam to the crawler of a tractor, a rather difficult item to clean because of the joints.

rate of attack on the metal itself, while they do not appreciably alter the rate of attack and removal of the mill-scale.

Inhibiting properties are possessed by about 150 known compounds. It is necessary that they possess free rinsing properties, and they must be nonfoaming and nontoxic. The most popular one employed is a compound of thio-urea. In all cases of acid pickling, the temperature employed is important. For example, a rise of 17 degrees in temperature will cause an increase in action of about five times the intensity. It is, therefore, necessary to control the temperature of the bath by installing heating and cooling coils equipped with a thermostatic control.

A recent advance is the development of the process of electrolytic pickling. The steel frames are hung on a cathode rod and are then suspended in a lead or a rubber-lined tank containing sulphuric acid. The anode is composed of a metal that is able to form a protective film on the steel. As an example, a lead anode is commonly used, as well as anodes constructed of tin and zinc.

The temperature of operation varies from room temperature upwards. It is more rapid than chemical pickling and whenever desired it permits the use of lower temperatures in a solution of a given concentration. A sufficiently high current density is applied so that large amounts of hydrogen are evolved at the cathode. A common electrolyte is a solution of dilute sulphuric or hydrochloric acid containing some sodium chloride. The temperature used is about 150 degrees F. When a lead anode is used, a layer of the metal is deposited on the steel surface and this forms a remarkably good base for the paint coating.

The best results are obtained by priming the steel immediately after the pickling and washing processes; however, indoor storage for periods up to 30 days are not too serious. On the other hand, if the steel is exposed to the weather for a short period after the pickling process, it will be found necessary to scrape and wire-brush any rust that forms before the application of the inhibitive primer.

Best results are obtained by rinsing the steel in hot water after it leaves the pickling bath. It is then allowed to dry by its own heat capacity, and is painted while still warm. The steel is dispatched to the site in a well-primed condition. It will be able to withstand exposure to weather conditions without involving the additional expense of surface preparation prior to further application of the field coats.

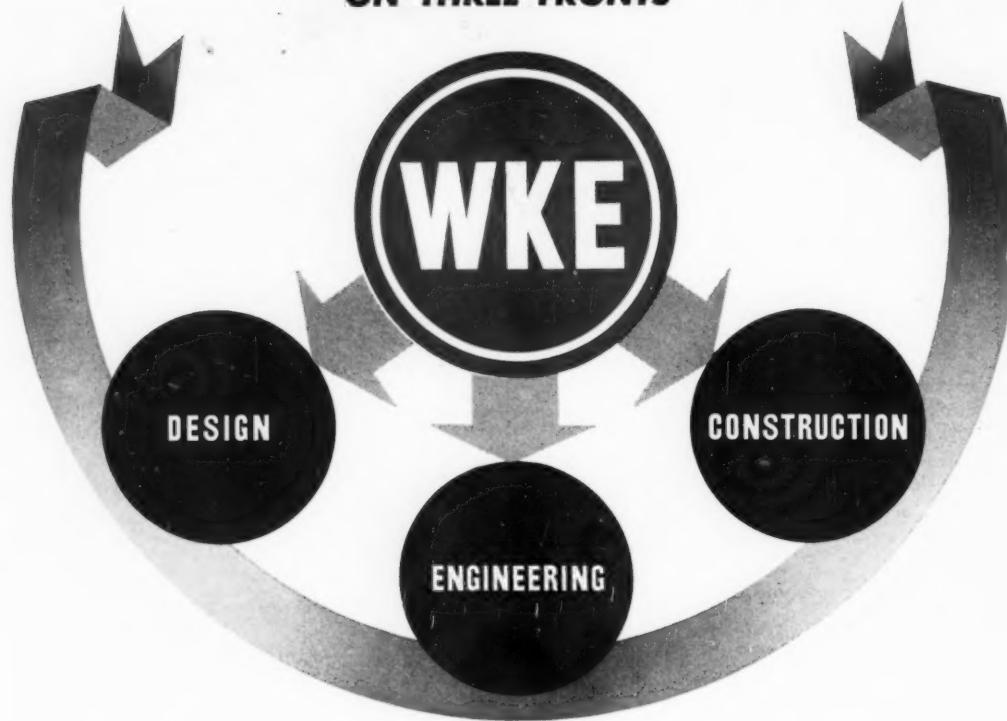
American Cyanamid Starts New Projects in Arkansas

Chemical Construction Corporation, a unit of American Cyanamid Company, New York, has started work on two new construction projects at the Lion Oil Company's chemical plant near El Dorado, Arkansas. Under construction are a sulphuric acid plant and an ammonium plant, output of which will be used for the production of fertilizer.

The sulphuric acid plant will have a daily capacity of 300 tons, and most of its output will be used by Lion Oil itself. The ammonium sulphate plant, with a capacity of 380 tons daily, will use ammonia from the Ozark Ordinance Works.

The latter plant, originally built by Chemical Construction and now in process of enlargement, was acquired by Lion Oil from the government at the end of the war.

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INTERNATIONAL

(Continued from Page 56)

FOMENTO (Development) Corporation of Chile, sponsor of Cia. Acero del Pacifico which will operate the \$83 million plant. The loan will bear a four-percent interest to be amortized over a 20-year period, beginning June 30, 1951. Construction of the plant is now approximately 20 percent complete, and 40 percent of the equipment already has been shipped, with a like amount scheduled for 1949. Pipe, mill, and sheet and tin plate mills will be placed in operation late this year, and the remainder of the plant should be in operation by early 1950. **Koppers Company, Inc.** of Pittsburgh is taking an active part in the project under long-term lease covering both construction and operation. **H. A. Bassett Company** of New York and other U. S. firms are furnishing consulting, engineering and other technical services.

BRAZIL—Because of the many opportunities now being afforded Brazilian mineral exporters, the director of the Commercial Office for International Exportation recently contacted the representative commission of the State of Espírito Santo, concerning graphite deposits in that state. Conditions are said to be excellent for the immediate development of large deposits in the territory.

VENEZUELA—Operations of **Guayana Mines, Ltd.**, 160 miles southeast of Ciudad Bolívar, in eastern Venezuela, have passed through the initial period of reorganization and rehabilitation, according to the president, George W. Tower. New development expense is still necessary, but constantly expanding output is in prospect with increasing returns from operations. Should permission be granted the company to export even half of its current gold production for sale on the free gold market, it is possible that the outstanding advances from various sources could be paid off rapidly. It is planned to increase mine production from 100 to 400 tons daily and then to 600 tons. Ore reserves are estimated at 377,105 tons, averaging \$18.43 per ton.

BRAZIL—At a recent meeting of the Central Commission of American and Brazilian Technicians, resolutions were brought forward to start immediate negotiations with the American Government concerning technical cooperation in the phosphate field. The following program, briefly stated, was decided upon: the American Government should assist the Brazilian Government, through technical men, in carrying out a study of the Brazilian phosphate deposits. Investigations for the more economical treatment of phosphate ore, as well as the application of phosphate products and studies of fertilizers were also stressed.

COLOMBIA—Owing to the greatly increased cost of equipment, Pato Consolidated Gold Dredging, Ltd., has announced that it does not contemplate installation of further dredges on its mining properties along the Nechi River. Latest production figures available show that from May 1 to November 1, 1948, a total of 8,096,000 yds. of gravel were handled for a recovery of 37,281 oz. gold worth \$1,304,835. During 1948, Pato also purchased the Urdanete mine on the Santa Isabel stream, with an estimated area of 2,000 acres.

FRENCH GUIANA—The Societe d'Exploitations Minieres de l'Inini reports that it is beginning to receive machinery and equipment ordered from the United States and Belgium necessary for the development of its Moyenne Mana property. Operations are expected to get into full swing during the first quarter of the year.



NORTH AMERICA

MEXICO—Idaho and Washington interests which acquired the **Minas**

de Guatamo property near Batuc, Sonora, two years ago, report that they now have an indicated net value of more than \$1,000,000 in ore. History of the mine is believed to date back to the Spanish conquerors, who are reported to have mined rich silver and gold ore at the surface. The present operators have found at depth a complex sulphide containing silver, lead, zinc and copper. Tests show that this ore can be concentrated easily by both heavy media separation and flotation processes. Development of the orebody was started last March and since has been opened for a length of 900'. Indicated ore is said to total 215,000 tons, averaging 6 oz. silver, 7½ percent lead, 16½ percent zinc and 2 percent copper. This ore is above the main level, and a winze sunk 55' below this level is also said to be in good ore. Some 700 tons of crude ore already has been shipped to the Eagle Picher mill at Bisbee, Arizona. Officials in the corporation include M. L. Schwary, Camas, Idaho, president; H. Grattan Lynch, Spokane, Washington, vice president; Frank Marr, Spokane, director, and Mrs. E. M. Borjessan, Spokane, treasurer.

QUEBEC—A new 2,000-ton concentrator was recently placed in pro-



NEVADA'S LARGEST DREDGE TO BEGIN OPERATIONS

Removal of some twelve million yds. of overburden by stripping (see above) is involved in the Greenan Placers operation at Battle Mountain, Nevada, where the largest dredge of any type ever built in the state is about to begin operations. The bucket-line dredge was purchased from the Manhattan Gold Dredging Company by the Natomas Company of California in 1947 to be reassembled under the direction of John L. James, formerly in charge of the Manhattan operation. Equipped with more than 125 buckets of 11 cu. ft. capacity, the dredge will handle 12,000 cu. yds. of gravel daily. The entire floating giant, which will displace 2,300 tons, moves along in its own pond, which is about 400' square. To supply the required power, installation of a 3,500-h.p. turbine power plant is proceeding, with about 100 men employed. During the last two years, Natomas has operated a dragline dredge in the shallow area of the placers and has handled 1,000,000 cu. yds. with satisfactory results. The deeper deposit to be worked now is estimated to contain 60,000,000 cu. yds. of profitable material. C. E. McKay, resident manager, is in charge of the overall operation and has directed development of this placer since 1939.

INTERNATIONAL

duction by East Sullivan Mines, Ltd., at its gold-copper-zinc property in Bourlamaque township. The initial schedule was set at 1,000 tons daily, with capacity operations anticipated by the end of February.

BRITISH COLUMBIA—Production activities have been started by Stemwinder Gold Mines, Ltd., at its copper-gold mine in the Phoenix camp near Greenwood. The company has acquired a 70 percent interest in the old McArthur mill which it plans to bring up to an 80-ton daily capacity as soon as development warrants.

NORTHWEST TERRITORIES—Excellent progress is reported by Discovery Yellowknife Mines, Ltd., in its construction program at Yellowknife. The main mill building and fine ore bin are 75 percent complete, and the coarse ore bin and crusher building already have been finished, as well as concrete work. In addition, a truck road from Yellowknife to the mine has been readied, thus speeding delivery of mill equipment and supplies this winter and effecting a saving in haulage costs.

ONTARIO—A contract covering a minimum of 5,000' of diamond drilling has been let by Norpick Gold Mines, Ltd., for its new copper-gold property in the Shebandowan Lake area, 80 miles west of Port Arthur. Previous operators spent some \$75 thousand on surface work and drilling which traced a mineralized zone for 3,000'. Widths up to 60' are reported in the western section.

SASKATCHEWAN—American Yellowknife Gold Mines, Ltd., with Athona Mines and associates, is now participating in the latest major uranium discovery at Black Lake, just east of Lake Athabasca, having acquired a 15 percent interest in a 10 sq. mi. concession granted by the provincial government. The concession adjoins the Tobey uranium discovery of Transcontinental Resources on the west. The latter firm, meanwhile, is

carrying out a program of diamond drilling and underground development by adits.

QUEBEC—At the present rate of shaft sinking, Elder Mines, Ltd., reports that lateral development of three lower levels is expected to start by February 15. The company is developing a group of gold claims, 10 miles west of Noranda in northwest Quebec.

BRITISH COLUMBIA—Following extensive examination work, Guillim Lake Gold Mines, Ltd., of Toronto has acquired two silver-lead-zinc properties near Invermere which it proposes to develop for early production. At present, consideration is being given to a plan for the installation of a mill to handle the lower grade ore, meanwhile shipping the high grade.

SASKATCHEWAN—Nicholson Mines, Ltd., operating on the north shore of Lake Athabasca, recently completed two diamond drill holes which are reported to have indicated radioactive mineralization. Currently, plant and equipment are being assembled preparatory to shaft sinking. Using a temporary plant, initial sinking will be a three-compartment shaft on the No. 4 zone. As soon as a heavier plant can be installed at the property, sinking of a second shaft will be started on the No. 2 zone area.

QUEBEC—Development work is being stepped up by Hosco Gold Mines, Ltd., at its gold property in the Rouyn district. Most of this work is concentrated on the third level, and ore is being drawn from three stopes on this level. Milling operations are continuing at the 100-ton daily norm.

MEXICO—A petition, submitted by the Better Works Board of Pachuca, Hidalgo, that a metal treatment plant be established by the Mexican government in Pachuca as a means of facilitating the exploitation of small mines, has been approved by the national commission for stimula-

tion of the mining industry. The board and commission agree that this plant will aid greatly in developing Hidalgo as an industrial metals center now that its gold-silver deposits are almost exhausted after centuries of exploitation. Hidalgo, the board contends, is rich in iron, lead, zinc, copper, antimony, manganese and coal. Manuel J. Trejo is chairman of the board.

ISLE OF PINES—C. H. E. Stewart, president of the Isle of Pines Mining Company, Ltd., has announced that milling operations have been started at a rate of 100 tons daily which is expected to be stepped up to 250 to 300 tons within a year. Initial grade will probably exceed the mine average of 0.47 oz. gold and 2.0 oz. silver per ton which has been developed on the 200' level at the No. 2 shaft for a length of 850'. Evidence of higher grade has been found in recently resumed development work on the same level. Future development plans include the sinking of the new No. 3 shaft to 375' and the establishment of a new level on this horizon.

ALASKA—After spending several months building ditches at their property on Buster Creek, five miles from Kako Landing above Russian Mission, Ramstad Brothers recently suspended their Yukon Mining Company operations. They reported an average season with an eleven-man crew.

ONTARIO—The iron ore potentialities of the assumed extension of the Minnesota Vermilion Range are to be investigated by Head of the Lakes Iron, Ltd., a new company formed in November. Nearly the full 7½-mile length of the property, which lies within Quetico Park, has been dip needle surveyed, and the iron formation has been mapped, with a view toward broader development. Financing of the new firm is headed by Robert R. Brown of Toronto, who is also president of Upper Canada Gold Mines.

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INTERNATIONAL



OCEANIA

SOUTH AUSTRALIA—The possible discovery of a new uranium field has been reported in the vicinity of Oodnadatta, resulting in the withdrawal of 1,200 sq. mi. of territory from ordinary mining regulations. Dr. H. G. Raggatt, director of the Commonwealth Bureau of Mineral Resources, had no official information on the new find, although he said the Marble Bar area in Western Australia is receiving particular attention.

TASMANIA—Surveys carried out by the State Mines Department are expected to open new white asbestos deposits in the districts of Beaconsfield, Ulverstone, Zeehan, Macquarie Harbour and Spero River. At present, Australian industries are dependent on Canadian asbestos, and it is hoped that development of Tasmanian deposits can displace this source, at least partially.

WESTERN AUSTRALIA—Under secretary of mines A. H. Telfer has received advices from the Coolgardie re-survey that an area about two miles south of Grosmont and 1½ miles west of Tantalite Hill is suitable for intensive prospecting in gold, magnesite, asbestos, feldspar and possibly pegmatitic minerals.

SOUTH AUSTRALIA—It is reported that 150 lbs. of selected ore treated by the Standard Mining Company has yielded 597½ oz. of gold bullion. The ore was taken from a vein between the 110' and 250' levels. Operations of the Standard company are at Tarcoola on the East-West transcontinental railway.

TASMANIA—North Broken Hill and Broken Hill South are carrying out an examination of the once highly productive Mount Zeehan silver-lead field, idle now for 20 years. The old workings have been unwatered, and geological tests are reported as satisfactory; however, reports have not been received as yet whether actual mine operations will be resumed.

NEW CALEDONIA—Societe le Nickel, which has been operating nickel deposits at Thio and Moindou since 1947, continues to be hampered by an acute shortage of Asiatic manpower (Indo Chinese and Javanese). This crisis, however, is being overcome by the installation of additional mechanical equipment and the importation of foreign workers.

WESTERN AUSTRALIA—Independent reports submitted by C. E. Blackett, mining engineer, and K. E. Finucane, geologist, indicate that profits from the first 520' of the

Mountain View mine at Cue will repay the capital investment. During a period of seven months, the battery crushed 1,374 tons of ore for a recovery of 5,614 oz. gold.

SOUTH AUSTRALIA—Imperial Chemical Industries of Australia and New Zealand is going ahead with plans to double the capacity of its alkali plant at Osborne. New installations are expected to increase the annual capacity to 72,000 tons of soda ash, 16,000 tons of caustic soda and 6,000 tons of bicarbonate of soda.

TASMANIA—Briseis Consolidated, N. L., Derby, is being liqui-

dated, following 11 years of tin mining operations. When first formed in 1934, the company estimated reserves to be from 4,000 to 5,000 tons of tin oxide. From the commencement of operations in 1937 to cessation in 1948, actual recovery was 4,111 tons. Heavy landslides during 1946 resulted in the abandonment of ground containing about 700 tons of cassiterite.

WESTERN AUSTRALIA—H. H. Carroll, managing director of Wiluna Gold Mines, Ltd., has announced that operations will be suspended at Wiluna by the end of February. The company will continue operation of the Mt. Charlotte lease at Kalgoorlie.



OLD ENGLISH KNIVES Bars of fine Swedish iron, fired for 10 days, were piled on each other, heated to a white heat, and hammered down to a single bar. Faint lines along the blade of Old English Knives represent the joints of the original welded bars...are visible evidence of their quality.



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INTERNATIONAL

NEW METHODS—NEW EQUIPMENT

Bucyrus-Erie Appoints Canadian Distributor

Appointment of Wilkinson & McClean, Ltd., of Calgary, Edmonton, and Lethbridge, Alberta, Canada, as distributors for Bucyrus-Erie blast hole drills, prospecting drills, and bit dressers was recently announced by Bucyrus-Erie Company, South Milwaukee, Wisconsin.

Well known in the mine, quarry, and excavating industries, Wilkinson & McClean, Ltd., will handle the popular Bucyrus-Erie 22-T, 27-T, 29-T and 42-T blast hole drills; prospecting drills; and No. 8 and No. 12 bit dressers. Their territory will include the entire province of Alberta.

Wilkinson & McClean, Ltd., also handle Bucyrus-Erie 3½ to 2½ cubic yard excavators, electric quarry and mining shovels, and walking drag-lines.

Seattle Warehouse for Raybestos-Manhattan

Raybestos-Manhattan, Inc., announces its new Seattle warehouse and office at 314 Occidental Avenue, for the convenience of its customers in the Pacific Northwest. A complete stock of industrial rubber products for the industrial requirements of the area will be carried.

The Warehouse will supplement and service distributors' stocks and will permit prompt service and deliveries. The principal products carried will be conveyor belting, transmission belting, V-belts, industrial hose of all types, and asbestos and rubber packings.

The warehouse and office will be in charge of Russell G. Heuman, whose headquarters are located at 131 Mission Street, San Francisco, where Littleton C. Barkley is general sales manager of the West Coast Division.

Bulletin for Hardinge

Hardinge Company, Inc., 240 Arch Street, York, Pa., has issued a four-page circular describing Hardinge grinding and pulverizing mills and their application in the mining, metallurgical, chemical, ceramics, stone products, and iron and steel indus-

tries. Conical Mills, Cylindrical Mills, Rod Mills, Tube Mills, and Batch Mills are briefly described and illustrated. A list of materials successfully processed in Hardinge Mills is included.

Founder of Dorr Co. Assumes New Position

Dr. John Van Nostrand Dorr, chemical, metallurgical and industrial engineer, inventor and founder of The Dorr Company, and its associated companies in Europe, has become Chairman of its Board of Directors and continues as Chairman



Dr. John Van Nostrand Dorr

of the Board of Dorr-Oliver, Ltd., London. Elmer R. Ramsey, a member of The Dorr Company for almost thirty-five years, for several years operating Vice-President, succeeds Dr. Dorr as president of the company.

Dr. Dorr is generally regarded as one of the great chemical, metallurgical and industrial engineers of his time, as well as a successful business administrator and prolific inventor of machines and processes. His own 26 inventions, notably the Dorr Classifier, Dorr Thickener and Dorr Agitator, have been applied successfully in over a hundred separate and distinct processing industries.

Switchgear Line Covered In New A-C Bulletin

Allis-Chalmers' broad line of switchgear and control devices is covered in a new 16-page guide released by the company.

Described and illustrated are rotary control switches, push-button stations, generator voltage regulators, synchro-operators, current and potential transformers, oil and air circuit breakers, disconnect switches, oil-immersed contactors, d-c relays and contactors, thermal relays, d-c remote positioning devices, indicating lamps, resistors, and terminal boards.

Types and ratings are supplied on the various equipment while standard wiring diagrams and photos of typical station combinations accompany the data on push-button stations.

Copies of "Allis-Chalmers Switchgear and Control Devices," 25B7095, are available upon request from MINING WORLD, 121 Second Street, San Francisco.

New Bulletins by Wemco

Western Machinery Company announces the availability of two new bulletins describing two of their units for ore classification and sand preparation.

"S-H" Classifier, Bulletin No. C-1-S-1, is a 12-page booklet covering the construction, applications and operating characteristics of WEMCO Classifiers.

Sand Preparation Machine, Bulletin No. C-1-O-1, is a 16-page bulletin describing the design, uses and operating characteristics of WEMCO equipment for sand preparation.

Copies of both bulletins may be obtained by writing to the Western Machinery Company, 760 Folsom Street, San Francisco 7, California.

BUNKER HILL

(Continued from Page 37)

of time in the Bunker Hill. Many types of machines and equipment have been adopted and put to work with the idea of making the best possible use of time-saving methods and the studies will go forward continuously.

Acknowledgments

I wish to thank J. B. Haffner, general manager, and S. W. McDougall, mine superintendent, respectively, of the Bunker Hill and Sullivan Mining and Concentrating Company, for general help and constructive criticism in the preparation of this paper.

(Continued from Page 26)

Bureau of Mines, recently accepted the position of mining electrical engineer in the sales department of Hazard Insulated Wire Works Division of The Okonite Company, Wilkes-Barre, Pennsylvania.

Clement Neumann of Negaunee, Michigan, has been appointed safety engineer for the mines of the North Range Mining Company. He succeeds A. J. Guscatt who is now superintendent of the company's Blueberry iron mine on the Marquette Range.

Ralph N. Neyman, general superintendent for the Hecla Mining Company, has been elected president of the New Hilarity Mining Company, succeeding the late R. L. Brainard of Kellogg, Idaho. Neyman had been vice-president of the company and will continue to serve as consulting manager in charge of development operations.

Louis W. Minturn, geological engineer with the Alcoa Mining Company, is now being addressed c/o the company at Bauxite, Arkansas.

Woodrow Adams, who had been working a property near Oracle, Arizona, has sold his interests there and moved to San Simon. He is now operating a mine near Steins Pass, New Mexico.

Obituaries

James Stuart Douglas, 80, president of the United Verde Extension Mining Company in Arizona from 1912 to 1938, died January 2 at his home in Montreal, Quebec. The son of Dr. James Douglas, founder of the Copper Queen Consolidated Mining Company, the predecessor of the present Phelps Dodge Corporation, Douglas moved from Canada to Bisbee, Arizona, in 1890 and soon turned his attention to mining. He was active in many southwest mine operations, including that of the Cananea Consolidated Copper Company in Sonora, Mexico, of which he was manager. His greatest fame and fortune, however, came from his part in the development of the United Verde property in Arizona's Verde mining district. He is survived by two sons, Lewis W. Douglas, U. S. Ambassador to Great Britain, and James Douglas of New York City, secretary of the Phelps Dodge Corporation.

Philip Read Bradley, 73, one of this country's best known members of the mining industry, died December 31 in San Francisco. Bradley was identified for more than three decades with the Alaska Juneau Gold Mining Company, of which he was president. Graduating from the University of California in 1896, he was associated with various mine operations in the western United States, Canada and New Caledonia, establishing offices in

San Francisco in 1912. Two years later, he went to Alaska, where he was in charge of the Treadwell mines before joining Alaska Juneau. In 1932 he returned to San Francisco, becoming president of Alaska Juneau in 1933.

James M. Gillie, 71, for many years superintendent of the copper precipitating tank department of the Anaconda Copper Mining Company, died November 23 at Butte, Montana. Except for a three-year period, Gillie had worked continuously with Anaconda since 1901.

H. E. Lewis, 66, former president and chairman of the board of the Jones & Laughlin Steel Corporation, died December 5 at Pittsburgh, Penn-

sylvania. He had previously been connected with the Carnegie Steel Company, the Bethlehem Steel Company and the Jeffrey Manufacturing Company in official capacities.

Cash I. Cook, 62, general manager of the Consolidated Coppermines Corporation, died December 22 at Kimberly, Nevada.

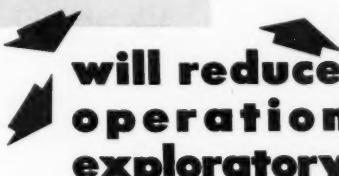
Walter G. Scott, 57, superintendent of the leaching plant at the Inspiration Consolidated Copper Company, died December 4 at his home in Inspiration, Arizona.

Howard V. Reusswig, 56, assistant chief engineer of the Minnesota state division of lands and minerals for the past 10 years, died December 29 at Hibbing, Minnesota.

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Capitol Concentrates

(Continued from Page 14)

1948 and first quarter 1949 partial procurement authorizations published in November. These are neither final nor complete, but they amount to some 60 million dollars, mostly copper, lead and zinc and mainly from the United States.

● Local Boards Will Decide

Interior Secretary Krug has asked Selective Service Hershey to defer miners from the draft. Hershey replied that local boards can defer where necessary and also stated that he thought the small numbers being inducted should not seriously hamper the industry. He should try and hire some miners!

● Casualty in Copper Field

It has been announced that the Isle Royale Copper Company will close permanently in the near future because of the lack of an incentive payment plan. Ever since the failure to pass such a bill or to renew the old premium price plan, Isle Royale has been unable to do any development or exploration work. Following the expiration of the premiums on copper, lead and zinc on June 30, 1947, a considerable number of properties, mostly zinc and lead, were shut down, and even the high metal prices have given little or no incentive to reopen as costs have more than kept abreast with prices.

● Strike Effects Far-Reaching

The complexities of modern economics are nowhere better illustrated than by the aggravation of the acute lead shortage by the West Coast longshoremen's strike which held up around 4,000 tons per month, and the loss of essential copper production through the strike of a mere 300 workers at Kennecott which closed down the entire operation.

● New Consultant Is Named

The new consultant to the Bureau of Federal Supply on lead problems will be Irwin H. Cornell, previously vice-president of St. Joe Lead Company. Cornell, it is assumed, will confer with producers concerning individual contracts for delivery to the stockpile. No doubt he will keep in mind the various past predictions of Board Chairman Crane of St. Joe as to the amplitude of world lead supplies.

● Agitation for Mineral Policy

A lot of fuss has been made recently in Washington about the lack of a specific mineral policy to guide the United States. It is probably true that a published policy would be a good thing, although it must have flexibility. It seems to be overlooked, however, that the Administration has a minerals policy which operates something like the British Constitution. It is an accumulation of opinions on the interpretation of congressional

policy statements in various acts bearing on the minerals industry, modified and, alas, frequently nullified by certain executive statements, such as the memorandum of the President issued when the Stockpile Act of 1946 was signed and his veto message on the Allen bill. This unwritten policy gives the bureaucrats wide latitude in many respects, but at the same time it is none-the-less definite in others. What should be done is to dust off President Roosevelt's mineral policy, which was actually published, furnish it up to suit the times, and have President Truman reaffirm it.

● Davidson Sends Up Trial Balloon

The speech delivered at Spokane

(December 4) by Assistant Secretary of the Interior Davidson was in many ways an undistinguished document—possibly because of multiple ghosting. However, the full text of the address should be a "must" for those in the mining business. While Davidson's speech does not contain startling headline material, it does outline what probably will be the policy course of the Interior Department for some time hereafter. It reaffirms certain past policies and trends, and indicates the line of future planning. Those who can read between the lines believe some paragraphs should be tagged "beware"; other paragraphs quite evidently are trial balloons calculated to test the squawking capacity of the mining industry.



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M. A. Hanna Firm Now Favors Seaway Project

Because of its present large interest in iron ore deposits in Quebec and Labrador, in association with Hollinger Consolidated Gold Mines, Ltd., of Canada, the M. A. Hanna Company has now come out in favor of the St. Lawrence seaway project.

President George Humphrey said he had written Ohio Senators Robert A. Taft and John W. Bricker asking them to give the subject thoughtful review because of new developments in the situation. "Exploration in the last years," he said, "have now definitely proved that large tonnages of high-grade iron ore exist in Quebec and Labrador."

He wrote that these developments, coupled with the gradual decline of Lake Superior ore reserves, make it important that midwest steel plants have the benefit of seaway transportation to maintain competitive positions in their present locations.

He said, however, that his concern still opposed the plan solely as a power project, favoring it strongly if the power aspect will be limited to economic justification.

89 Iron Ore Prospecting Permits Granted in Minn.

Ray D. Nolan, director of the Minnesota division of lands and minerals, has announced that 89 permits to prospect for iron ore have been awarded to 13 mining companies by the executive council. A total of 130 bids was submitted on the 99 properties offered, against an average of 24 annually for the past seven years.

Companies represented by Pickands, Mather & Company were awarded the highest number of permits with 39. The W. S. Moore Company of Duluth received 24 permits, of which 18 are on properties south of the known ore limits of the Mesabi Range, one to four miles south of Mt. Iron.

Republic Steel Corporation was awarded seven permits; Butler Brothers, two; Charleson Mining Company, two; Oliver Iron Mining Company, one; Pacific Isle Mining Company, one; Carl Hedman, two; Hedman and Strand, five; Haley and Young Mining Company, two; and W. L. Taylor, four.

Nolan ascribed the jump in bids submitted to the need for more ore than is currently in sight. Sixty of the permits were granted for the

Mesabi and the remainder for the Cuyuna Range; three were for stockpile units.

New Jersey Iron Deposits Sold to Petroleum Firm

New Jersey's oldest iron mining property at Ringwood has been sold to the Petroleum Export-Import Corporation of New York for \$700 thousand, with the approval of the War Assets Administration.

The deposits, whose development dates back to pre-Revolutionary War days, was purchased by the government of 1942 for the purpose of increasing iron ore production for national defense; however, improvements were not completed in time for them to go into operation.

The Petroleum corporation, of which A. E. Lynch of Midland, Texas, is president, has informed WAA that it intends to spend a total of \$425 thousand for plant improvements and mine development.

The property consists of 878 acres with two known ore deposits, together with a crushing plant, concentrator, equipment, and surface buildings. The cost of the property and improvements to the government was approximately \$4 million.



The greatest peacetime production record in history was achieved in 1948 by the iron mines on the Lake Superior ranges. Latest reports available showed a total shipment of 82,436,478 tons to December 1, an increase of 5,075,356 tons over the corresponding period in 1947.

Several of the smaller iron operators on Minnesota's Mesabi Range made substantial records for the 1948 season. The Charleson Iron Mining Company shipped 835,599 tons from the Missabe Mountain mine at Virginia; Rhude & Fryberger, about 252,000 tons from their Seville mine at Kinney, the Troy at Eveleth, as well as from the Pennington and Snowshoe mines on the Cuyuna Range; E. W. Coons & Company, 177,610 tons from the Julia and Commodore mines at Virginia; The Pacific Isle Mining Company, 174,104 tons from 10 small and mostly exhausted mines; Inter-Range Mining Company, 108,351 tons from the Minnewaska mine at Virginia, and the Haley-

Young Mining Company, 69,506 tons from its newly opened Elbern mine near Chisholm.

The Snyder Mining Company, which shipped 1,029,602 tons of iron ore in 1948 from its Webb, Shenango and Virginia mines on the Mesabi Range, has leased the Martin iron mine on Minnesota's Cuyuna Range. Two diamond drills are doing exploratory work at the property which is expected to enter the operating list in the near future.

The Mahoning mine of Pickands, Mather & Company, which shipped a total of 3,914,800 tons of iron ore in 1948, continues to be the company's largest shipper as well as one of the top single shipping mines on the Mesabi Range. The mine was opened in 1895 and has been a constant producer since that time. Last year's shipments bring the total to 93,864,016 tons. The Scranton mine, originally an underground operation, was the company's second producer with 1,862,846 tons, and the Embarrass, on the eastern end of the range, was third with 1,260,290 tons. Pickands Mather's total Lake Superior shipments were 15,241,786 tons.

On the Vermilion Range at Ely, Minnesota, the Oliver Iron Mining Company is sinking its Pioneer A and B shafts to open a sixteenth level. Steel sets are being used in the shaft.

The M. A. Hanna Company, including Butler Brothers mines for the first time, shipped 8,538,518 tons from the Minnesota ranges, and a total of 10,306,251 with its Michigan shipments included.

Purchase of a Geiger counter for the St. Louis County land commissioner's office has been urged in order to ascertain the presence of uranium-bearing minerals in northeastern Minnesota. Reports of mineral findings have come out of the Fairbanks Toomi area on the eastern boundary of St. Louis County, northwest of Two Harbors, and just south of the iron range formation. Rich uranium-bearing ores were recently discovered along the north shore of Lake Superior, in Ontario, in an area reported to contain geological formations similar to those in northeastern Minnesota.

Michigan's Menominee Range iron mines, after shipping 4,760,529 tons of ore in 1948, are stockpiling in preparation for another busy season. The change over from shipping to stockpiling is made without loss of time.

For the 1948 season, the North Range Mining Company shipped a total of 417,135 tons of iron ore from

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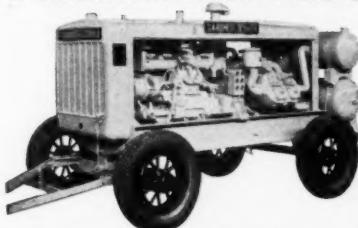
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three properties: The *Blueberry* at Ishpeming, Michigan, 306,780 tons; the *Book* at Alpha, 93,193 tons and the *Mary Charlotte* stockpile at Neogaune, 17,173 tons. The latter property now has been abandoned.

The Iron River iron mining district is looking forward to a busy 1949 season. The *Tully-Bengal* mines, the *Warner* at Amasa and the *Crystal Falls* are all looked to as contributors to an even larger area production than that of 1948.

Two new iron ore properties on the Mesabi Range are undergoing stripping operations this winter by the *M. A. Hanna Company* of Duluth, Minnesota. The first of these is the *Perry* mine, also known as the H-33 reserve iron ore property, three miles east of Nashwauk, where a 12-*yd.* Bucyrus-Erie dragline is being employed. The second property under development is the *Shiras* mine in the Wabigoon group, Buhl, Minnesota.

Pickands, Mather & Company, Duluth, Minnesota, is developing a new open-pit iron mine in Section 10-57-21, directly west of the old *Leetonia* mine open-pit. A Bucyrus-Erie shovel, serviced by 20 cu. *yd.* Euclid trucks and working two shifts, is doing the stripping. Cuts are being taken from east to west, and ore has already been uncovered in the first cut where overburden is shallow. Stripping, at present, is being used to build a road around the south end of the old *Leetonia* dump and to grade the ground for mine buildings which will be on the *Campbell Group Reserve* property, east of the *Leetonia*. Transformers and fuel tanks are set up, and warehouse and garage buildings will be erected soon. Later, the old *Warren* mine dump, to the west, will be utilized to care for the stripping until a new area can be prepared for that purpose. The tract being developed contains some very good

direct-shipping ore and will probably contribute to the company's shipments in the 1949 season.

Drilling operations are being undertaken by the *M. A. Hanna Company* at the old *Morton* iron mine, a Minnesota-owned fee property between Hibbing and Carson Lake. The property, which is credited with 2,271,308 tons of available ore, has been idle since 1917 when it was operated by the *Tod-Stambaugh Company*. Its concrete shaft, sunk under compressed air, is the only shaft on the Mesabi Range to have employed sand hogs, as far as is known. The lease is now held by the *M. A. Hanna Coal & Ore Corporation*.

The *Calumet & Hecla Consolidated Copper Company*, Calumet, Michigan, reports that it does not intend to dismantle and scrap the equipment and buildings of the *Lake Linden* reclamation plant. Instead, investigations are being made with a view toward utilizing the plant for other purposes. Poor and Company of Chicago are co-operating in the investigation.

The *Radar Exploration Company* of Toronto, Ontario, has completed a gravimetric survey for the *Jones & Laughlin Ore Company* on lands east of the *Vicar* iron mine, the Gogebic Range's most easterly mine.

Harry S. Peterson, general superintendent of the *Jones & Laughlin* mining properties in Michigan, has announced that the *Jones & Laughlin Ore Company* has taken over the *Inter-State Iron Company*'s interests in that state. Both companies are J&L subsidiaries. Minnesota operations will continue to be known as *Inter-State*.

A heavy program of equipment repair work and stripping to the ex-

tent of 32,000,000 cu. *yds.* of dirt and rock is being pushed by the *Oliver Iron Mining Company* in Minnesota during the winter months. Among the properties where large-scale stripping programs are under way are: The *Gilbert*; the *Canton*; the *Spruce*; *Rouchleau*; *Mt. Iron*; the *Hartley*, *Sherman*, *Frazer* group; *Monroe*; *Hull-Rust*; the *Gross-Marble* and the *Walker*.

The powdered iron plant at Aurora, Minnesota, has been closed pending the settlement of a \$116 thousand claim made against the State of Minnesota by *Continental Machines, Inc.*, the lessee. Chairman Wilkie of the *Continental* company told the *Iron Range Resources and Rehabilitation Commission* that some subsidy on the metal pressing process might be necessary until the output reached a profitable volume. He said further that \$65 thousand of the total was needed for a new furnace and the balance for contracting costs. The claim has been referred to the state attorney general.

The *Oliver Iron Mining Company*'s new washing plant at its *Mt. Iron* mine, Mt. Iron, Minnesota, is another where provision has been made for a surge pile. A conveyor system, stockpile trestled area with a capacity of 10,000 tons of crude ore has been designed to furnish a continuous feed to the plant when the pit supply is interrupted or temporarily insufficient. A surge pile, either for crude ore or for concentrates, is becoming a regular feature of washing plant design.

Safety departments of the *M. A. Hanna Company* and *Butler Brothers* have been combined and are in charge of George Borgeson, supervisor of safety for the Hanna firm. All safety activities for the combined operations will be handled from the Hibbing, Minnesota, office of the Hanna company.

An Interstate Commerce Commission examiner has recommended that a claim by *Butler Brothers* be allowed for alleged railroad overcharges of \$1,032,571. The St. Paul, Minnesota firm claims it was overcharged by the Duluth, Missabe & Iron Range Railroad and by the Great Northern Railroad on iron ore shipments from Keewatin, Nashwauk and Hibbing to Head of the Lakes ore docks.

Because of the rapidly increasing scope and importance of research, *Jones & Laughlin Steel Corporation* has announced the creation of three parallel and organizationally equal technical organizations. At Ishpeming, Michigan, ore research will be directed by F. X. Tartaron, while metallurgical research will be carried on by the Hazelwood laboratory group under the supervision of Dr. H. T. Clark. The third research group is the division of coal and coke, C. L. Potter, manager.



TRI-STATE FIRM HANDLES TAILINGS

Some 60,000 to 70,000 tons of chat and sand tailings are being handled monthly by *Sooner Milling Company, Inc.*, of Picher, Oklahoma. The firm is using three 15-ton capacity hauling units on a two-mile haul to the mill at Cardin. The above photo shows a new Lorain TL-20 shovel loading the mine tailings for retreatment to recover the zinc and lead.

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Sunshine Production Tops 110 Million Ozs. Silver

Production figures compiled for the four general ore zones in the famous Sunshine mine just east of Kellogg, Idaho, show that over 110,000,000 oz. of silver have been taken from 3,650,000 tons of silver-lead ore.

Some 92,000,000 oz. of this silver came from 3,200,000 tons of ore mined from the original discoveries of the Sunshine-Polaris vein system at the surface to the present 3,700 bottom level. Another 19,000,000 oz. of silver and 38,000,000 lbs. of lead were taken from 400,000 tons of ore in the Chester vein zone which starts at the 2,500 level and extends to the 3,700.

In the Silver Syndicate fault zone, north of the Jewell shaft, production, mostly from development work, has been about 16,000 tons of ore averaging 16.5 oz. silver and six percent lead. The Yankee Girl vein has been explored for a strike length of 3,500' on the 3,100 level, and production from this development work, together with a small amount of stoping, has been about 33,000 tons of ore yielding some 72,000 oz. of silver.

Nabob Mill Started Up On Development Ore

Milling operations have been started in the 300-ton capacity plant of the *Nabob Silver-Lead Company*, operating in the Pine Creek district of the Coeur d'Alenes.

Ore now being treated is coming from the Crystalite vein in the deep crosscut tunnel and from the upper workings of the Denver vein. Drifting on the Crystalite vein, which was started westerly, has proceeded about 200', and in this distance has developed mill feed of sufficient grade to warrant milling.

The company also plans to drive crosscuts at intervals to the Denver vein and drift easterly on the Sidney vein, which showed some high-grade galena at the point of intersection.



An extensive diamond drill program is now being carried out on the 900' level by the *Highland Surprise Consolidated Mining Company*, Wallace, Idaho. Meanwhile, work on the 700' level of Highland is proceeding into Nevada-Stewart ground. Ne-

vada is also driving easterly in the Sinclair tunnel into the Sidney hill, following a seam of ore that is reported not yet commercial. Highland's mill operations are nearing capacity, with close to 300 tons being treated daily; lead concentrates are going to the Bunker Hill smelter at Kellogg, while zinc concentrates are being stockpiled for future shipment to Anaconda and Great Falls, Montana.

Mining of low-grade phosphate ores from public lands in southern Idaho will be undertaken by the *J. R. Simplot Company* of Pocatello, Idaho, under a lease arrangement with the government, according to a recent announcement by H. Byron Mock, regional director of the U. S. Bureau of Land Management. In giving lease approval, Secretary of the Interior J. A. Krug said the agreement is an example of the type of co-operation between government and private industry contemplated for maximum beneficial use of the nation's natural resources. Under terms of the lease, the Simplot firm will be required to invest \$50 per acre, or a total of \$56 thousand in actual mining operations, developments, or improvements.

The *Lookout Mountain Mining Company*, Kellogg, Idaho, has started cutting a station on the 1,800' level of its Pine Creek property, preparatory to sinking a 2½-compartment shaft for a depth of 1,000'. Present plans call for the new shaft to go straight down on the footwall side of the vein, with no stops for other levels. When the 1,000' objective is reached, it is estimated that about 350' of cross-cutting will be necessary to intersect the main vein system. Other promising veins also will be explored at this depth. Underground operations are being supervised by Gene Wimer.

Bonds in the sum of \$250 thousand are being offered by the *Whitedelf Mining and Development Company* to finance a deep development program at its mine near Clark Fork, Idaho. Compton I. White, secretary-treasurer, explained that operations have reached the stage where it is necessary to extend the mine workings by sinking the main shaft to the 1,000' level. Principal objective of the company is to open an orebody 500' below the deepest mine workings, located by U. S. Bureau of Mines diamond drilling. The ore assayed 30 percent lead and 31 oz. silver per ton, White said, and H. Grattan Lynch, Spokane mining engineer, has esti-

mated the reserves at 27,000 tons in the north ore shoot above the 1,000' level. Latest reports from the mine state that lessees working the Thornton stope have shipped three carloads of silver-lead ore to the Bunker Hill smelter which netted \$310 a ton.

C. A. Dye, who recently relinquished operations at the *Wilbert mine*, which he had controlled for several years, has organized *National Metals Company*, with headquarters at Arco, Idaho. The new firm will continue development of the *Sentinel mine*, near the Wilbert, about 20 miles northeast of Howe, which has been shipping a carload of oxidized zinc-lead ore weekly for some time. The company also has acquired additional properties in Lemhi, Camas and Elmore counties. In Camas County, the *Hidden Treasure mine* is undergoing development through the winter months, with a lower tunnel being driven to get under the lead-silver-gold ore.

The *Southfork Mining and Leasing Company* is continuing development of the placer claims which it acquired near Elk City, Idaho, in 1946. In recent months, an engineering survey has been completed and numerous tests made of material obtained from test pits and bank bulldozing. Vern Finch of Spokane is company president.

Development work on the 2,800' level has been resumed by the *Coeur d'Alene Mines Corporation*, following a \$15 thousand fire which destroyed the company's surface plant in McFarren Gulch, near Osburn, Idaho. The firm is employing portable compressors belonging to the *Capitol Silver Mining Company* while surface structures are being rebuilt.

Mining claims, formerly held under lease and bond from the *Liberal King Mining Company* in the Pine Creek district, have now been acquired by *Sunset Minerals, Inc.*, of Kellogg, Idaho. Some 2,500 to 3,000 tons of ore are being treated at the *Liberal King mine*, producing 100 tons lead concentrates, 300 tons of zinc, 1,500 oz. silver and eight oz. gold monthly. The mine has a four-year supply of ore developed at the present milling capacity.



Milling operations have been started by the *Olamont Mining Com-*

pany at its *Jewel* gold property, three miles west of Butte, Montana. Of 75 to 100-ton daily capacity, the new modern mill is centrally located so that ore from the company's other nearby claims may be easily handled. Underground, the company has completed sinking its shaft to the second level, where discovery of a high-grade gold-silver vein is reported. W. D. Tidrick, Los Angeles, company president, has spent most of the past year and a half at the property during mill construction and development. C. W. Rose is superintendent, and Clarence Lamler is mine foreman.

The *Mineral King Mining Company* reports a new discovery of mill grade lead-silver ore, made during bulldozer operations for the construction of a timber road at its property in the East Coeur d'Alenes near Saltese, Montana. An air compressor has been installed, and drifting is now under way. As there is no mill nearby, it is hoped that the grade will improve as operations get into the vein.

Erection of a new mill and sinking the 300' main shaft an additional 300' are included in the spring plans of the *New Elkhorn Queen Mining Company*, operating in the old Elkhorn mining district near Boulder, Montana. The company, which is de-

veloping a property that lay idle from 1903 to 1944, started production activities in November and is said to have received more than \$7,200 for six cars of mine-run gold-lead-silver ore shipped to the East Helena smelter. The ore is coming from a replacement type deposit in dolomite and is being mined from a winze between the 300' and 500' levels. Francis Wickham of Boulder is company president.

Of great importance to Montana is the recent approval given by the National Minerals Advisory Council to a plan that the U. S. Bureau of Mines carry on experimental work for the electrolytic and chemical beneficiation of domestic chrome ores. Montana should stand to gain by this action because it is believed that its large deposits of chrome ore are applicable for the manufacture of ferro-chrome for present consumption and for stockpiling purposes. A sum of \$100 thousand annually has been urged for the promulgation of this campaign.

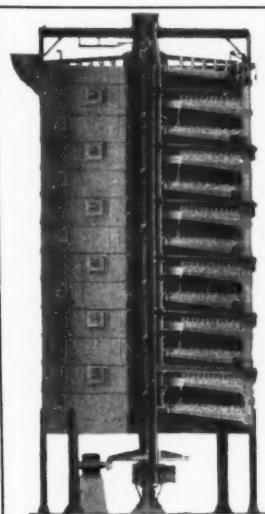
With the search for radioactive ores reaching an intensity among prospectors equal to that of the gold rush days, the Montana School of Mines has received a new Geiger counter, capable of indicating both

beta and gamma rays. A portable instrument, available for field as well as for laboratory work, it will be of value to the physics, metallurgy, mineral dressing and geology departments of the school, as well as to the Montana Bureau of Mines and Geology.



An extensive underground exploration and development program is planned by Edward Anderson, R. B. Hall and Archie Farnsworth, Medford, Oregon, recent acquirors of the *Cherry Gulch* gold properties in the old Vicksburg district near Denio, Oregon. The new operators also intend to enlarge mill capacity to between 30 and 50 tons. Developed by 2,000' of tunnels and lateral workings, the claims are said to contain some 30,000 tons of good milling ore.

A new company, *Current Creek Mining, Inc.*, has been organized at Prineville, Oregon, for the purpose of developing an antimony property on Current Creek in Jefferson County, eight miles east of Ashwood. At pres-



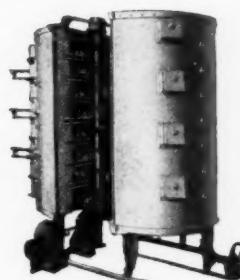
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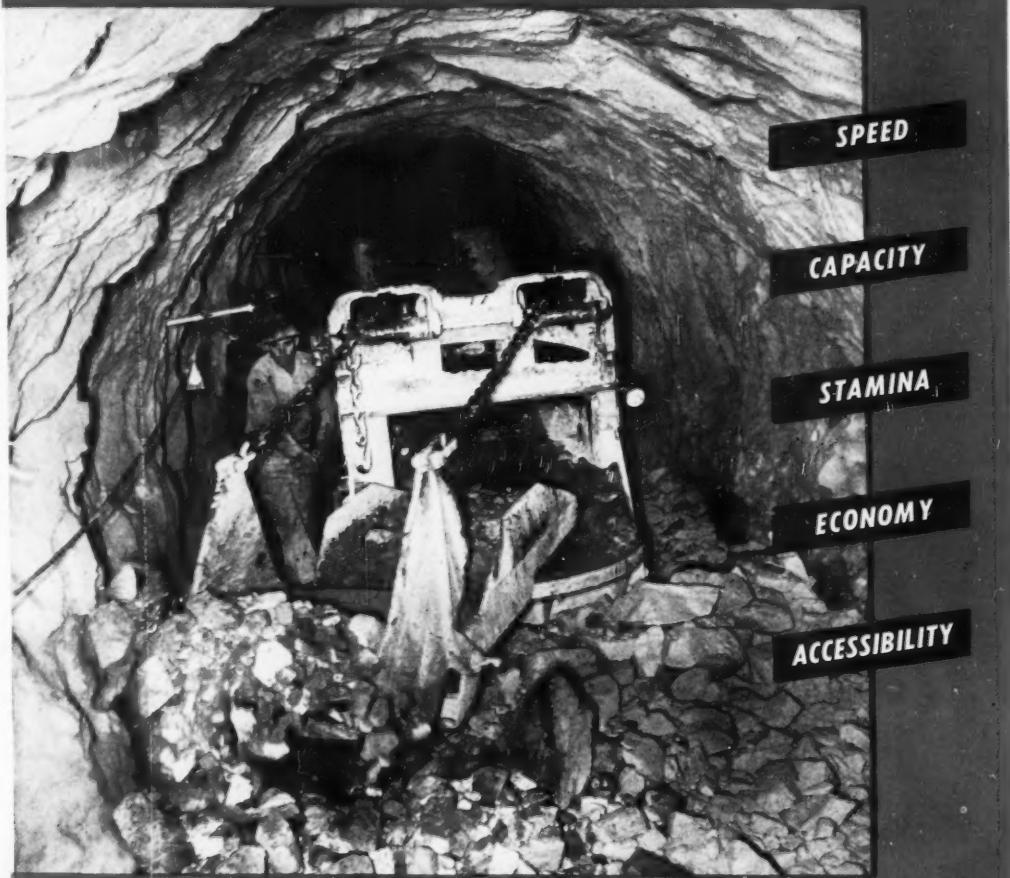
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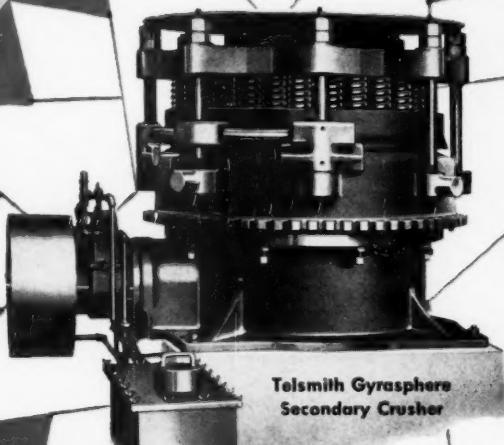
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ent, the company is driving a cross-cut to the southeast from the east side of the creek in an effort to locate the surface antimony occurrence at depth.

A 25-ton Nichols-Herreshoff furnace has been completed at the Amity mercury mine of the *Amity Mining Company* in the Ochoco area of Crook County, Oregon. Numerous obstacles delayed the completion of the furnace, but production activities are expected to start as soon as weather conditions permit, with a crew of 14. Before operations were suspended, drifting in an easterly direction in the Dihl vein encountered high grade ore. A. R. Morris is company president.

C. A. Gray, manager of the *Pacific Mutual Silver Lead Company*, operating near Keller, Washington, reports the completion of another 5,000 linear ft. of bulldozing to further trace the vein system. He also disclosed company plans to let a contract for the 200' extension of the main Mammoth tunnel to prove additional ore tonnage in the Nos. 3, 4 and 5 Bunker Hill veins. Diamond drilling in the spring will be undertaken to determine at greater depth six known veins and ore shoots, after which steady production is expected to begin.

The *Sunny Peak Mining Company*, 514 Columbia Building, Spokane, Washington, recently filed articles of

incorporation with the secretary of state for Idaho. These articles permit a wide range of activities, and the new firm will take over on a share for share exchange basis all the properties and assets of the *Glacier Silver-*

Lead Mining Company of Lincoln County, Montana, with holdings in Idaho, Montana and Washington. Development work will be continued on the Mineral Hill, Mohawk and Gubser groups of claims near Connelly, Washington, with expectations of shipping ore this year. Charles J. Weller of Coulee City, president of Glacier, heads the new company, and H. E. Majer and F. W. Kiesling of Spokane are co-incorporators.



W. L. Ziegler, manager of the *Pend Oreille Mines & Metals Company* on the American side of the Washington-British Columbia border, reports that mine development at the Pend Oreille is now about 60 percent complete. Material and manpower shortages during the past two years have delayed the program considerably, as well as production from the mine; however, completion of the incline was of importance as well as installation of more capacity in compressed air. Ziegler estimates that enlargement of the plant to 1,000-ton daily capacity will cost a total of \$1,000,000. The present mill is operated seven days a week on a 650-ton a day schedule, principally on lead-zinc ore from development faces. The extensive program begun by Pend Oreille in January, 1946, consists of some 11,000' of drifting, 3,200' of raises and inclines, ore and waste pocket stations, and construction of added mill capacity and surface buildings.

Exploratory programs on the *Advance* and *Iroquois* lead-zinc mining claims in northern Stevens County, Washington, are being accelerated by *Mines Management, Inc.*, following satisfactory diamond drilling results. At the Iroquois, some 1,700' of diamond drilling has fanned through the large mineralized zone, and 1,500' more is planned. Mine buildings are now being erected preparatory to 2,000' of drifting and crosscutting which will be started about 600' from the portal of the old 800' Paragon tunnel. At the Advance, where a compressor, mucking machine and automatic drifters have been installed, a new tunnel is being driven, while two raises are being put up to the surface from an old adit. Both operations are being financed by the *Silver Dollar Mining Company*, one of the newer dividend payers in Idaho's Coeur d'Alenes. C. O. Dunlop is president of both firms.

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Kennecott's New Refinery Will Cost \$16,000,000

Utah's first electrolytic copper refinery now under construction south of Garfield will cost \$16 million and increase Kennecott Copper Company's annual pay roll by \$2.5 million, according to a recent announcement.

Erection of the structural steel began in January. Grading operations have been carried on for the past several months, and site preparations are now approximately two-thirds completed. Extensive railroad trackage changes are approximately one-fourth finished.

The new refinery, which will provide Utah's first access to commercial copper suitable for fabrication, will furnish jobs for about 800 additional employees, raising Kennecott's total employment in Utah to 5,300 men. Normally, 2,100 are employed at the mine and another 2,100 at the Arthur and Magna mills.

New Park Completes Mayflower Shaft Sinking

Sinking operations were recently completed by the *New Park Mining Company*, Keetley, Utah, in the main shaft of the *Mayflower* mine.

In stepping up operations, the company used the Boskovich mucker, a new mechanical mucking machine which doubled the speed of mucking shaft rounds, shortened the time required to timber and eliminated the need for staging in drilling station openings.

The sinking operation included excavation of 11,000 cu. ft. of rock at the stations and skip pocket openings. Milan N. Boskovich of Midvale, Utah, supervised the sinking as shaft foreman.

Engineers' Day to Be Held At Colo. School of Mines

Featuring speakers on many phases of the mineral industries as well as exhibits and scholarship examinations, the fifteenth annual Engineers' Day of the Colorado School of Mines will be held in Golden on Friday, April 22.

Exhibition space, both indoors and out, is available, free of charge, to all industries engaged in or related to the discovery, extraction and defining of minerals and petroleum.

Complete information concerning

the day's activities may be obtained from J. Robert Medaris, chairman of the Engineering Day committee, Golden.



Matthew Ollsen, general manager of the old *Caribou* mine near Boulder, Colorado, reports that he hopes to have 150 men at work on the property by early spring. The old silver mine, abandoned at the turn of the century with a drop in silver prices and de-watered only a few months ago, recently received wide acclaim when an important discovery of pitchblende was made. At present, Ollsen said, work is in the exploratory stage, with diamond drilling being conducted by a crew ranging from 32 to 70 men.

A new group, headed by H. P. Ehrlinger of Silverton, Colorado, has effected a merger of the 33 *Gold King* and adjoining 45 *Golden Monarch* claims in San Juan County. Previous operators of the *Gold King* drove tunnels across *Golden Monarch* property, cutting several promising veins which they were not able to develop. Present plans call for full exploration of these veins. In addition, a raise will be put up from the mill level tunnel so that ore can be delivered to the mill from underground, making possible year-round operation. Arrangements also may be made whereby the new operators will use the nearby *Lead Carbonate* mill until they can construct a new plant at the property. The *Gold King* has a production record of more than \$6 million in 24 years of operation.

It is reported that the *Vanadium Corporation of America* is planning an exploration program in the La Veta Pass area near Pueblo, Colorado, following a vanadium discovery on East Indian Creek, 24 miles southwest of Walsenburg. If sufficient ore is found in the area, it is believed likely that a processing plant might be established near Walsenburg.

The *Mineral Engineering Company* of Grand Junction, Colorado, has been awarded a contract for the drilling of 30,000 to 40,000' of holes on the Outlaw Mesa uranium mining area in Mesa County near Gateway. The area to be drilled includes public land reserved by the government as well as the holdings of a number of small mine owners in the district. To fa-

cilitate this and subsequent drilling operations, the Atomic Energy Commission is building a camp to accommodate 50 men. At present, the company has 15 drills in operation in the region, using special mobile equipment designed for this type of work. A crew of 40 is employed.

Jack J. Walsh, president of the *Wilfley Leasing Company*, reports that preliminary production is under way at the *Wilfley* mine, near Kokomo, Colorado, following the discovery by government drillers of a nine ft. blanket vein of zinc. So far, the company has driven a five ft. by nine ft. incline shaft at a 32 degree angle from the lower tunnel level for a distance of 300' in the orebody. As accurately as can now be estimated, the orebody extends approximately 140' north of the winze, and diamond drill tests have revealed that it extends at least 1,800' below present operations. High grade zinc ore is currently being mined from the north drift on the third level. The south drift from the winze will be started in eight ft. of high-grade zinc ore, it is reported.

Under a three-year contract between the *United States Vanadium Corporation* and the Atomic Energy Commission, independent miners have received an offer from the corporation's Rifle, Colorado, plant to purchase their uranium-bearing ores which are amenable to processing. Previously, only ores from the corporation's mines were treated at the Rifle plant. Under the new contract, however, production is expected to increase rapidly to double its former output.

The *Elkton* mine dump near Cripple Creek, Colorado, is now being moved by the Colorado Trading and Transfer Company to make room for the new Carlton mill which will be erected by the *Golden Cycle Corporation* this spring. The dump is being loaded into trucks and hauled to the loading docks above Elkton. From there, approximately four railroad cars of material daily is being shipped to the *Golden Cycle* mill in Colorado Springs for processing. The O. W. Walvoord Company, 401 High Street, Denver, has the contract for the design and construction of the new mill.

At the *Orient* mine, north of Lawson, Colorado, pumping operations, which began on the 125' level, have been completed to the 300' level, where a good lead-silver vein is said to be indicated. Crosscutting and drifting will be carried out on this

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An option, involving approximately 38 acres of mineral ground, has been obtained by the New Quincy Mining Company from Park Utah Consolidated Mines Company for \$13 thousand. The newly acquired property is adjacent to other mineral holdings of New Quincy in the Uintah and Snake Creek mining districts of Wasatch and Summit counties, Utah.

An announcement has been made by Vern Bullock, vice president of the Syndicate Oil & Mineral Company of Provo, Utah, that drilling operations at the company's mine on Wasatch Mountain, east of Santaquin, are about to enter a mother lode of high-grade lead ore. The mine is situated in a rugged area of Utah County and can only be reached by jeep, foot or horseback.

Pushing exploration work in the Evans group of claims, in Utah's Tintic district, the Chief Consolidated Mining Company recently cut into the California fissure on the 1,100' level. This fissure is now being followed to pick up contact with east and west breaks, similar to the pattern in the nearby Centennial Eureka. More than 60 cars of ore is being shipped each week from the Gemini and No. 1 Chief mines.

Park Utah Consolidated Mines Company, Keetley, Utah, has extended its exploration drifts sufficiently in the Bonanza Flats area to push crosscuts toward the parallel fissures and begin raises into the Park City formations above. The area surrounding the Park Utah No. 1 shaft has been unwatered, and the pillars of ore are being shipped, accounting for the recent increase in tonnage. The ore carries good values in lead and zinc.

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Pumping Suspended in Fad Shaft as Water Increases

Pumping operations have been suspended in the Eureka Corporation's Fad shaft at Ruby Hill, one and a half miles from Eureka, Nevada, due to an alarming increase in the flow of water.

Orders to terminate operations, received by George W. Mitchell, manager, from the company's Toronto headquarters, said that increased water flow encountered in November was much greater than capacity of the plant. In addition, the increased flow was accompanied by mud and disintegrated rock, coming from a fissure or fault which filled the shaft to a point about 90' below the sixth level station.

In view of these facts, the management decided to conserve funds pending the result of studies made to determine the best plan of procedure.

Preliminary estimates indicate that a sum, probably exceeding \$8 million, will be required before the mine can be unwatered and the ore zone opened.



Construction of a \$175 thousand 100-ton selective flotation mill is getting under way near the Golconda mine, 12 miles north of Kingman, Arizona. Financing of the new custom mill is by Basic Metals, Inc., of Arizona, of which G. C. Moore, Chloride, is president.

Thomas Stoelting, chief engineer for the newly organized Yarnell Consolidated Mines, operating north of Perkinsville, Arizona, reports that the company is contemplating the construction of a 150-ton custom mill at its property.

A five-stamp pilot mill is being readied for production at the Blackie Group of gold claims which adjoins the old Morgan City mine near Peoria, Arizona. The shaft has been sunk to a depth of 130', a sufficient water supply has been developed and pumps are now being installed. Roy L. Bell, Route 1, Box 122B, Peoria, is directing the work.

A new tunnel is to be driven on a lower level of the Summit mine near Chloride, Arizona, as soon as present work at the top of the mountain is completed. Chutes from the shrink-

age stopes are being pulled and when this project is finished the equipment will be moved to the new location. The Summit is being worked by R. R. Langley of Chloride with a crew of eight, and production is 800 tons of lead, zinc, gold and silver ore monthly.

The Copper Age claim near Chloride, Arizona, is being worked by the Mohave Lead and Zinc Company, J. R. Paine, president and general manager. Ten men are employed, and production is running about 400 tons of ore monthly, which is treated at the Keystone mill, also leased by Paine. Considerable dead work has been necessary in getting the old workings reconditioned before production could be started.



Major Construction at Calaveras Central Mine

A large crew is now engaged in a major construction program at the Calaveras Central mine, Angels Camp, Calaveras County, California, with the objective of providing a future capacity production of 600 to 800 tons of gold-bearing gravel daily. California's largest deep placer operation, the property suspended production prior to the war to rebuild and enlarge its plant. Now, both shafts are being retimbered, and a new 100' steel headframe has been installed at the main shaft (see above) and a 40' headframe at the second shaft. New electrical power installations also have been provided, and the hoists are being rebuilt and enlarged. In keeping with the increased operations, large storage bins and a specially designed crushing plant will be added, with provisions for stockpiling commercial aggregates and road material. Harry Sears, who first developed the property, is general manager.

The shaft of the Upshot mine in the Big Bug district, three miles north of Mayer, Arizona, has now been sunk to a depth of 200', and some lead-zinc ore which will require flotation milling has been developed. Mr. Sullivan of Mayer is in charge of present work.

The Consolidated Feldspar Corporation of Kingman, Arizona, is maintaining a regular production of 1,600 tons of feldspar and silica monthly from its open pit operation. Twenty-one men are employed.

The Red Cloud, Black Rock and Hidden Valley mines in south Yuma County, Arizona, have been taken over by George I. Holmes and Walter Riley, Box 1670, Yuma, who have erected a small mill on nearby Martinez Lake to treat the old dumps. Metal values are in lead, zinc and silver.

About 1,200 tons of silver ore are being mined monthly from the open pit operation at the Silver Reef group of two claims in the Casa Grande mining district of Arizona. Four men are employed under the supervision of A. W. Gerhardt, manager, Box 493, Casa Grande. I. N. Clausen of Phoenix, owner of the Silver Reef, is leasing to Sherwood Owens.



Production activities have been resumed by the Coronado Copper and Zinc Company of Los Angeles at its Afterthought copper-lead-zinc mine near Ingot, California, following completion of a 100-ton unit of the selective flotation plant. Operations are on a three-shift basis, with 40 men employed. Small reserves of ore, said to average 16 percent zinc, with commercial amounts of copper, lead, gold and silver, have been blocked out at the property.

Tungsten production has been resumed at the Strawberry mine in Madera County, California, about 85 miles northeast of Madera. The new company, headed by H. A. Savage, A. R. McGuire and Al Judson, all of Fresno, have a 50-ton mill in operation on the property and are employing a crew of 30 men. Shipments of the scheelite concentrate are being shipped to the Twining Laboratories in Fresno for sampling and sale. Meanwhile, mining men in the district are seeking establishment of a government stockpile for the pur-

chase of scheelite and other strategic minerals in or near Fresno and believe this would lead to reopening of many mines and prospects now idle.

Following installation of a centrifugal separator, milling of gold ore has been resumed at the Kelly mine, seven miles south of Hayfork, California. The new unit is said to remove arsenic from the crushed ore, effecting a good gold recovery by the amalgamation process. Development of the vein discovered recently 100' west of the old workings is reported to be progressing favorably. The ledge is 14' wide and carries both free gold quartz and tellurides. Tom Kelly is the operator.



The Searchlight Consolidated Mining & Milling Company has taken over the operation and management of the mill at Searchlight, Nevada, installed by American Gold Mines, Inc. Having modernized and increased the capacity of the plant to 50 tons daily, the company is now treating the higher-grade ores from its Quartet property. It is planned to process Quartet ores at the Searchlight mill until the company's new larger flotation plant has been completed.

Shaft sinking operations are planned by Wyman Brothers of Reno at their Reisbeck property at Sand Springs, 25 miles east of Fallon, Nevada. A hoist, compressor and other equipment already have been installed on the ground. The old shaft, which was put down to 150' several years ago, will not be used in the renewed operations.

A. E. Nelson and partners of Mina, Nevada, are reported to be completing arrangements for the shipment of 50 tons of copper-silver ore daily from a property in the Camp Douglas area, 30 miles east of Mina. The ore body is said to be from 45 to 150' wide and is being mined by the open-pit method.

The Round Mountain Gold Dredging Corporation reports that it has ordered machinery which will be delivered late this summer at its several thousand acres of gold-bearing leases near Tonopah, Nevada. The operation, to start in the fall, will be by power shovel, as the bedrock is not suitable for a dredge operation. Lease terms provide for a royalty of 10 percent of gross on alluvials and 6½ percent of gross on lodes. The ground content has been estimated at 45,000,000 cu. yds., and an average of 30 to 40 c. a. yd. gross is expected from the alluvials.

O. H. Quinn, operator of the Quinn mill near Beatty, Nevada, reports that operations are being accelerated

and are now on a 16-hour schedule. Recovery by amalgamation is averaging 85 to 90 percent, he reports, and a satisfactory stockpile of good grade ore is being furnished by the Senator Stewart mine. Concentrates are being shipped to the U. S. Smelting, Refining and Mining Company at Salt Lake City.

Development of a large lead deposit in the Overland Pass country south of Elko, Nevada, is being undertaken by Blaine Hoalta, Marion Fisher and Bruce Swackhammer of Battle Mountain. The new operators have taken a lease and option on the property for a reported sum of \$30 thousand from owners Frank Harmer, James Shobai and Zed Williams of Elko. The vein on the property is said to average 150' in width at the surface and has been traced for an approximate length of 1,200'.

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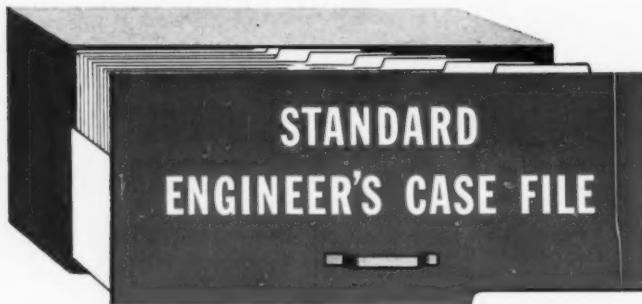
ORE SAMPLE FILTER

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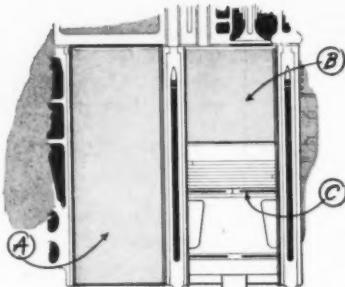
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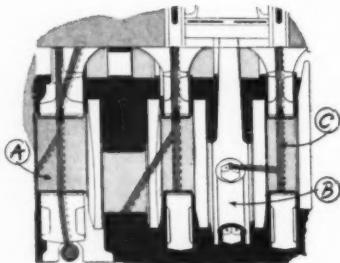
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THE MARKET PLACE

Mack Trucks Shifts Key Men

Promotion of T. J. Zeller to factory manager of its Allentown (Pa.) plant, succeeding C. J. Moran, and advancement of A. C. Schliewen to manager of its Plainfield (N. J.) plant, succeeding Mr. Zeller, has been announced by Mack Trucks, Inc.

In replacing Mr. Moran, who has been transferred to Mack's western sales headquarters in Los Angeles, Mr. Zeller assumes direction of the company's largest plant, in which all Mack trucks and buses are assembled, such components as cabs and front ends, frames and axles are manufactured, and fire apparatus chassis are produced.

Parent Company Will Conduct Activities

Worthington Pump and Machinery Corporation announces that beginning November 29, 1948, the manufacturing and distributing activities of its subsidiary, Ransome Machinery Company, will be conducted by the parent corporation.

Manufacturing operations for the lines previously manufactured by Ransome will be carried on at Worthington's Dunellen Works, Dunellen, New Jersey, the same location for-

merly used by Ransome Machinery Company. Sales activities will be directed from Worthington's executive offices at Harrison, New Jersey, through the Ransome Sales Division located at the Dunellen Works.

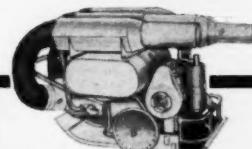
Customers may be assured of attentive service with the benefit of the added facilities of the entire corporation for research and development, procurement, manufacture, and marketing.

WEMCO Adds Two Engineers to Staff

John Marshall Davis, Metallurgical Engineer, has joined the staff of Western Machinery Company, with headquarters in the Southeast. Mr. Davis will be engaged in metallurgical sales and service work for the WEMCO Equipment Division and the Western-Knapp Engineering Co. Division of the firm in the Eastern territory of the United States.

Dan F. Beaton has joined the staff of Western Machinery Company as sales engineer, with headquarters in the Salt Lake City office of the firm. Mr. Beaton will be concerned with metallurgical sales and service for the WEMCO Equipment Division and the Western-Knapp Engineering Co. Division of Western Machinery Company in the Intermountain territory.

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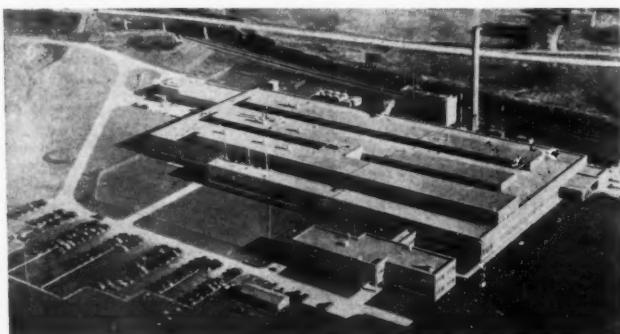
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American Brake Shoe Opens New Foundry

National Bearing Division of the American Brake Shoe Company announces the opening of its new non-ferrous foundry at Meadville, Pa., the newest of Brake Shoe's six postwar plants. Located in the heart of the country's steel-producing area, Meadville was a logical choice for the new plant since it placed National Bearing nearer to users of blast furnace castings, steel mill bearings and industrial non-ferrous parts. It will provide complete machining facilities which were not available in any of the old plants.

New Manufacturing Plant For Industrial Air

Gilbert Schnitzer, President of Industrial Air Products Company, 3200 N. W. Yeon Avenue, Portland, Oregon, announced the opening of the firm's third oxygen and acetylene manufacturing plant at Medford, Oregon, with Gene Spiker as manager.

The new 5,000 square foot plant, Mr. Schnitzer said, will serve the entire southern Oregon and California regions with oxygen and acetylene gases, plus a complete line of welding supplies and equipment.

Industrial Air Products also has plants and warehouses in Portland, Oregon, and Spokane, Washington, and over 100 distributing stations in the Northwest. The firm is distributor for National cutting and welding equipment, Resistaloy hard facing, Wilson electrodes, Page gas rods, Tweco products, Quaker Tu-Line hose, Sight Feed acetylene generators, and Glenn-Roberts A. C. welding equipment.

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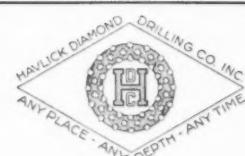
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Three Personnel Changes For Atlas Powder

Atlas Powder Company has announced three changes, to become effective January 1, 1949, in its midwestern explosives sales organization. D. J. Carroll Copps, who has been manager of the company's Chicago District Explosives Sales, is appointed manager of Joplin, Missouri, District Sales, succeeding R. E. Caskey, who is taking over general advisory duties on explosives sales in the midwestern area. John F. Flippo, who has been assistant manager of Chicago District, succeeds Mr. Copps as manager of that district.

Leo B. Grant Heads N. Y. Sales Office

The Dow Chemical Company has announced the appointment of Leo B. Grant as manager of its New York sales office succeeding Ralph E. Dorland, who held that position from 1919 until his death last May.

Mr. Grant was associated with Dow's magnesium division in Midland, Michigan, for 20 years before joining the executive staff of its New York office about a year ago.

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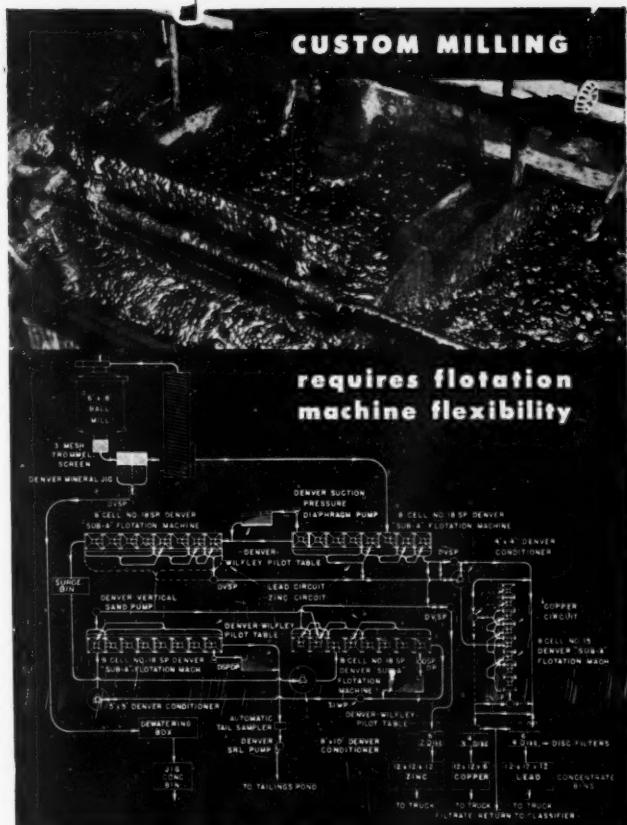
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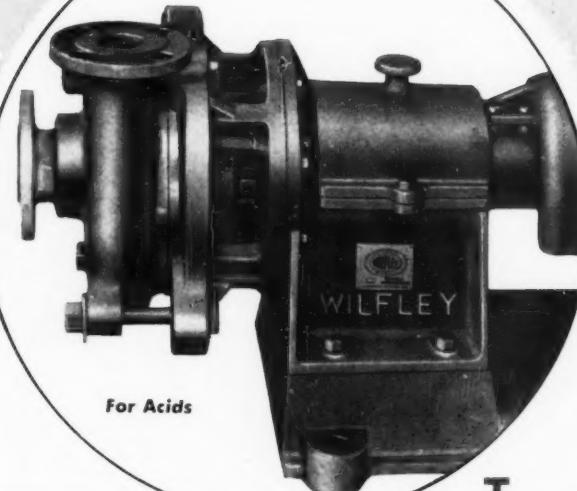
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